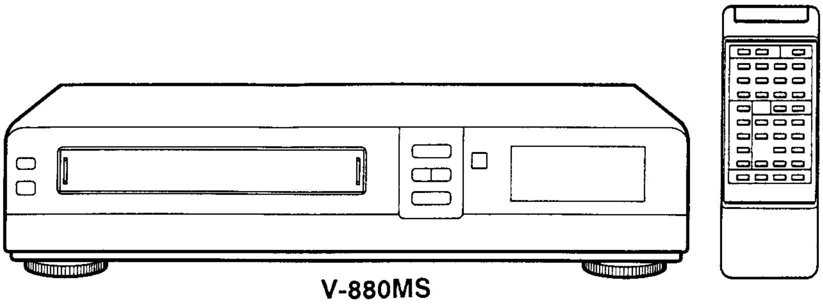
SERVICE DATA
FILE NO. 030 - 300

TOSHIBA
COLOR VIDEO CASSETTE RECORDER
V-880MC / 880MS



V-880MS

SPECIFICATIONS

GENERAL

Video recording system:	Head configuration 2-head rotary
Video signal:	CCIR: 635 lines, 50 field, PAL/SECAM: Color signal
Storage temperature:	-20° to +60°C (-4° to +140°F)
Operating temperature:	5° to 40°C (41° to 104°F)
Antenna:	75-ohms external aerial terminal for UHF
Channel coverage:	CCIR ch: V_L: E2 - E4, V_H: E5 - E12, UHF: E21 - E69, CATV: V_L: X-S1, V_H: S2-S20
	OIRT ch: V_L: R1 - R5, V_H: R6 - R12, UHF: E21 - E69
	CHINA ch: V_L: C1 - C5, V_H: C6 - C12, UHF: C13 - C57
	USA ch: V_L:2 - 6, V_H: 7 - 13, UHF: 14 - 79, CATV: V_L: 2-A3, V_H: A2-W UHF: 65 - 125
	JAPAN ch: V_L: 1-3, V_H: 4 - 12, UHF: 13 - 62, CATV: V_H: M1-S13
AERIAL output signal:	G.I.K. SYSTEM 30 - 39ch (CCIR/OIRT), C22 - C26ch (CHINA), M-SYSTEM J25 - J37ch (JAPAN), US26 - US38ch (USA)
Power requirement:	AC 110 - 240V, 50/60Hz
Power consumption:	23W
Weight:	5.8kg
Dimensions:	430mm x 101mm x 355mm (W/H/D)

VIDEO

Input:	VIDEO LINE IN: Phono-type connector, 1.0V (p-p), 75-ohms unbalanced, sync negative
Output:	VIDEO LINE OUT: Phono-type connector, 1.0V (p-p), 75-ohms unbalanced, sync negative

VIDEO

Signal-to-noise ratio:	Better than 43 dB (SP)

AUDIO

Input:	AUDIO LINE IN: Phono-type connector, more than 47 k-ohm, -8 dBs
Output:	AUDIO LINE OUT: Phono-type connector, less than 4.7 k-ohm, -6 dBs
Frequency response:	80 to 10 kHz
Signal-to-noise ratio:	Better than 42 dB

TAPE TRANSPORT

Tape speed:	PAL/MESECAM/SECAM mode: SP: 23.39 mm/sec. LP: 11.70 mm/sec. NTSC mode: SP: 33.35 mm/sec. EP: 11.12 mm/sec.
Maximum recording-time:	PAL/MESECAM/SECAM mode: SP: 240 min. (E-240) LP: 480 min. (E-240) NTSC mode: SP: 160 min. (T-160) EP: 480 min. (T-160)
Fast forward time:	Within 6 min. (E-180)
Rewind time:	Within 6 min. (E-180)

TIMER

24 hour digital indication,
8 programmes/28 days

Caution: Copyright Act 1956 Users of video recording equipment should note that it may be unlawful to record television broadcasts, cinematograph films or video recording without the permission of the relevant copyright owner.

Design and specifications are subject to change without notice.

PRINTED IN JAPAN Dec., 1990 Ⓢ

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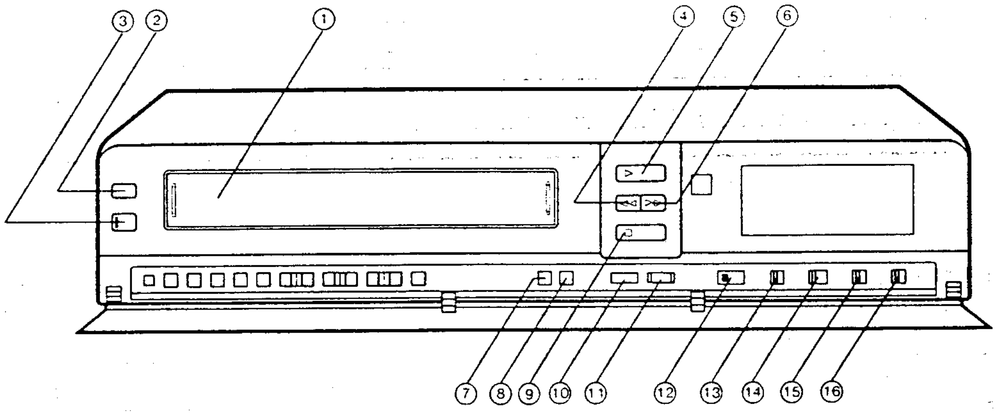
SECTION 1
GENERAL DESCRIPTION

FRONT PANEL



① **Cassette Compartment**
Slide the cassette into the unit until the mechanism draws it in automatically

② **EJECT button**
Press this button to remove the cassette when the power is on and off.

③ **ON/STANDBY button**
This button is used to turn the VTR on and off.

④ **Rewind button (REW)**
Press this button to rewind tapes. During the playback mode, pressing this button will allow you to play tapes in reverse rapidly.

⑤ **PLAY button**
Press this button to play back a pre-recorded cassette. The PLAY indicator comes on. Frame advance can be performed while in the still mode.

⑥ **Fast forward button (FF)**
Press this button to fast forward the tape. During the playback mode, pressing this button will allow fast forward playback.

⑦ **DIGITAL TRACKING button**
Tracking is automatically set for an optimum condition. (Only in the playback mode)

⑧ **Recording tape speed select button (SP/LP·EP)**
When set to the SP position, recording in the SP (Standard Play) mode is possible; when set to the LP position, recording in the LP (long play) mode is possible. When in NTSC mode, the recording tape speed is switched between SP and EP.

⑨ **STOP button**
Press this button to stop the tape or interrupt the fully-automatic function.

⑩ **PAUSE/STILL button**
Used to operate the VTR in three different ways:
A) To temporarily stop the tape in the recording mode.
B) To view a still picture in the playback mode.
C) To advance the picture frame by frame, by using the PLAY button after this button is pressed.

⑪ **Recording button (REC)**
This is used for recording.

⑫ **VIDEO SYSTEM switch (AUTO/PAL, MESECAM /SECAM/NTSC)**
Used to switch the video system setting positions according to the receiving broadcast systems or the video format of the tape to be played back.
Normally place this switch to the "AUTO" position.

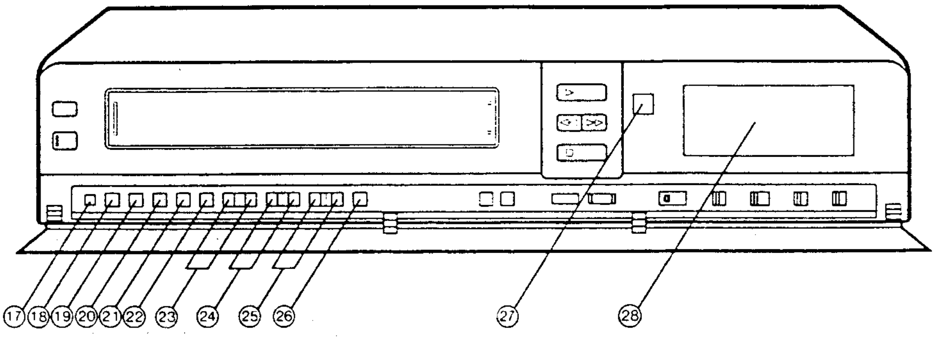
⑬ **NTSC (3.58/4.43) select switch**
Select NTSC 3.58 or NTSC 4.43 according to a TV set used.

⑭ **Picture select switch**
HQ: When recording in this position, enabling distinct picture for recording and playback. We recommend this position for recording.
EDIT: Set in this position when copying.
N/R: For playing back a rental tape.

⑮ **COUNTER select switch (PAL, SECAM, MESECAM/NTSC)**
Set this switch according to the video format of the tape used, when using the linear time counter.

⑯ **TAPE select switch**
PAL, SECAM, MESECAM mode
Use the E-180 position when using a shorter tape than an E-180 video cassette.
Use the E-240 position when using an E-240 video cassette.
NTSC mode
Use the T-120 position when using a shorter tape than a T-120 video cassette.
Use the T-160 position when using a T-160 video cassette.

FRONT PANEL



⑰ **CLOCK SET button**
Used to set or reset the VTR clock. When this button is pressed once, the unit enters the clock set mode. When the button is pressed again after setting the VTR clock, the VTR clock starts to work.

⑱ **PRESET button**
Used to preset the channel.

⑲ **SKIP button and CFM button**
Used to skip the desired channels in channel prestting. Also used to check the previously inputted programme data. Once this button is pressed, the programme scanning starts to continuously show the contents of the programme on the fluorescent display.

⑳ **CLEAR button**
Used to cancel to programming data that has been preset to programme numbers 1 through 8. After pressing the PGM button.

㉑ **OTR button and BAND button**

OTR button: Used to perform recording in 30 minute periods in normal mode. (Up to 4 hours)
Used to specify the timer-off time in units of 30 minutes in the timer mode.

BAND button: Used to switch the frequency tables for V_L, V_H, UHF as long as the PRESET button is pressed to ON.

㉒ **PGM button**
Used to start programmable timer operation.

㉓ **TRACKING/V-LOCK and SET (+)/SET (−) and SEARCH button**

TRACKING button: When this button is pressed in the tape play mode, tracking adjustment is done.

V-LOCK button: When this button is pressed in the still mode, vertical lock adjustment is done.

SET (+) button: This button is used for clock and timer programme setting. The digits counts up by pressing this button.

SET (−) button: This button is used for clock and timer programme setting. The digits counts down by pressing this button.

SEARCH button: This button is used for channel presetting. The tuning channel moves to a higher channel by pressing this button.

AFT button: This button is used to switch over the ON/OFF setting of the AFT (Auto Fine Tuning) function when presetting the channels.

㉔ **PICTURE CONTROL and FINE (−/+) button and SHIFT (−/+) button**

PICTURE (SOFT/SHARP): Use this button to make a playback picture softer or sharper.

FINE (−/+) buttons: Used for channel presetting. When you want to move to a lower channel, use the FINE (−) button to fine tune. Use the FINE (+) button when you want to move to a higher channel for best possible reception.

SHIFT (−/+) buttons: These buttons are used for clock and timer programme settings. Use the SHIFT (+) button to change the setting position to the next. Use the SHIFT (−) button to change the setting position to the previous.

㉕ **Channel select button (up and down)**
Use to select the specific channel which you wish to view or record.

Down button (V): When this button is pressed once, the channel digit decreases by one.

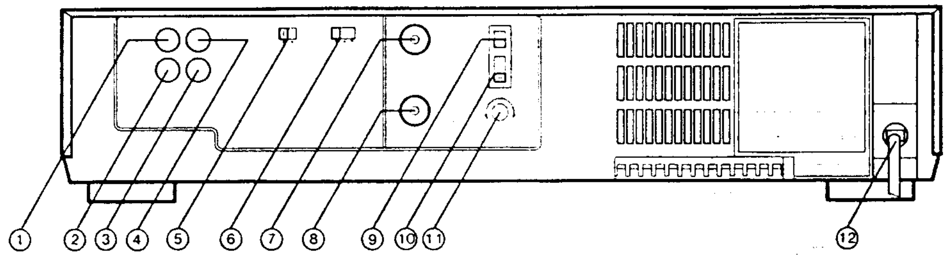
Up button (Λ): When this button is pressed once, the channel digit increases by one.

㉖ **TIMER button**
Used to enter the timer mode. To release the timer stand-by mode, press it again.

㉗ **Infrared remote control receiver**
This sensor is used for receiving infrared signals from the Remote Control Unit.

㉘ **Fluorescent display**

REAR PANEL



① **VIDEO IN socket**
For connection to a video output line.

② **VIDEO OUT socket**
For connection to a monitor TV or a video input socket.

③ **AUDIO OUT socket**
For connection to a monitor TV or an audio input socket.

④ **AUDIO IN socket**
For connection to an audio output line.

⑤ **TV SELECT switch**
(NTSC 4.43/PAL 60 (NTSC ON PAL))
Used when playing back NTSC recorded tapes.

⑥ **TUNER switch (AUTO, B/G, I)**
Switch this switch when you receive a broadcast programme interfered with noise in an area where a NICAM programme (England area) is aired.
Use the "AUTO" position when a normal TV programme is received or recorded.
Use the "B/G" or "I" position to the broadcast system when NICAM programme is broadcast from the TV station.

⑦ **AERIAL IN socket**
Connect the aerial lead to this terminal.

⑧ **AERIAL OUT plug**
Connect this terminal to the socket on the TV.

⑨ **TEST SIGNAL switch**
Provides a test signal to assist you to tune your television receiver to the output of the VTR.

⑩ **TV SYSTEM switch (G,I,K)**
Select the "G" or "I" or "K" position according to the TV set connceted to the VTR.

SYSTEM G: Use this position when the VTR is connected to a PAL/SECAM G type TV set.
SYSTEM I: Use this position when the VTR is connected to a PAL I type TV set.
SYSTEM K: Use this position when the VTR is connected to a PAL/SECAM K type TV set.

When you receive an NTSC programme or when you playback an NTSC tape, the VTR outputs the video signal in the M system mode automatically even if the switch is set to any of these setting positions.

⑪ **UHF CHANNEL control**
Adjust the output from the VTR to your television receiver to any channel.

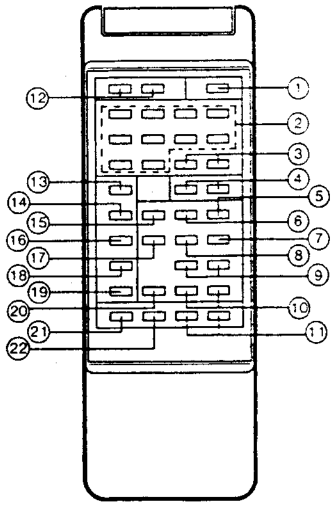
Europe:	E30 to E39 channel
USA:	US26 to US38 channel
JAPAN:	J25 to J37 channel
China:	C22 to C26 channel

⑫ **Power lead**
Connect to a wall AC outlet.

Note:
For the IN sockets of above items ① and ④, the VTR is automatically switched into the line input mode immediately after the external pins are inserted into these sockets.

REMOTE CONTROL UNIT

The buttons that are not followed by explanations have the same functions as the buttons similarly marked on the VTR.



① **ON/STANDBY button**
This button is used to turn the VTR on and off.

② **10 keys**
10 keys: Used to directly select the desired channel. When you select channels 1 to 9, combine the 0 key and any of the keys 1 to 9 make channels such as 01, 02, 03, etc.
Also used to specify the index number when performing index skip search.

③ **Channel select buttons (up/down)**
To initiate TV channel programming.

④ **Record buttons (REC)**
Press to start recording. The REC indicator comes on. When recording, be sure to press the two buttons simultaneously.

⑤ **Fast forward button (FF)**

⑥ **STOP button**

⑦ **X2 button**
Used to playback a tape at a speed double the normal play mode.

⑧ **PLAY button**

⑨ **SLOW buttons**
This button is used to slowly play back the picture. Use the 1/12 button to perform the 1/12 slow playback. Use the 1/6 button to perform the 1/6 slow playback.

⑩ **TRACKING/SLOW TRACKING button**

- In the play mode, press this button to adjust tracking.
- In the slow mode, if the noise appears on the screen, keep pressed these buttons until you obtain the best possible image on the screen.

⑪ **TIMER buttons**
Used to make the VTR enter the timer mode, especially for the one-touch timer recording. When doing the timer recording, be sure to press the two buttons simultaneously.

⑫ **PICTURE SHARPNESS (SOFT/SHARP)**
Use this button to make a playback picture softer or sharper.
When these two buttons are pressed simultaneously, tracking position is adjusted to the center.

⑬ **INDEX button**
Used to perform index search and index skip search.

⑭ **TIME SEARCH button**
Used to have the VTR enter the time search function mode.

⑮ **Rewing button (REW)**

⑯ **ZERO RETURN button**
Used to rewind or fast forward the tape around "0H00M00S" position that is set with the RESET button.

⑰ **PAUSE/STILL button**

⑱ **REMAIN/CLOCK button**
Use to switch the display between time, counter and tape remaining display cyclically.

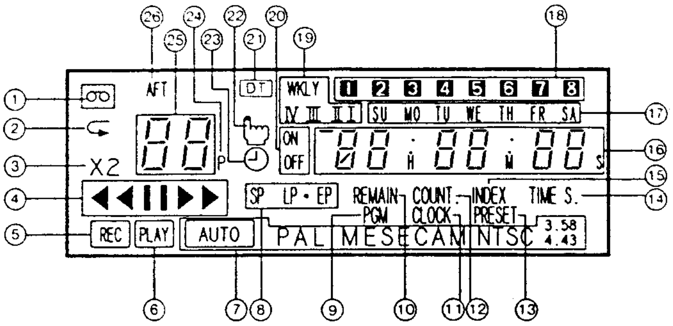
⑲ **COUNTER RESET button**
Used to reset the counter reading.

⑳ **DT (DIGITAL TRACKING) button**

㉑ **SP/LP·EP select button**

㉒ **OTR button**

INDICATORS



① **Cassette indicator**
The lamp is lit when a cassete is loaded, even when the power is off. The lamp flashes when a tape is being inserted or ejected.

② **Repeat play back indicator**
Lights when the VTR enters the repeat playback mode after the PLAY button is kept pressed for six seconds in the play mode.

③ **X2 indicator**
Lights when the X2 button is pressed.

④ **Multifunctional indicators**
See the indicator's table below.

Indicator's table

Play ▶ PLAY	Still ❚❚ PLAY	Record ▶ REC	Double Speed Play X2 ▶ PLAY
REW ◀◀	FF ▶▶	Frame ❚❚▶ PLAY	Slow ❚▶ PLAY
Reverse Picture Search ◀◀ PLAY	Forward Picture Search ▶▶ PLAY	Recording Pause ❚❚ REC	

⑤ **REC indicator**
Lit when the unit is in the REC mode or REC pause mode.

⑥ **PLAY indicator**
Lights when the VTR is in the play mode or when the VTR is in the mode that is accompanied with the "PLAY" display in the above indicator's table.

⑦ **VIDEO SYSTEM indicator**
Lights according to the broadcast system that the VTR receives and the video format of the tape being played back.

⑧ **Tape Speed indicator (SP/LP·EP)**
When playing back a pre-recorded tape, the tape speed mode is automatically indicated.
When recording, the tape speed, to which the VTR is set, is indicated in the display.

⑨ **PGM indicator**
Lights when the PGM button is pressed.

⑩ **REMAIN indicator**
Lights when the REMAIN/CLOCK button is pressed so that the remaining time is displayed.

⑪ **CLOCK indicator**
Lights when the CLOCK SET button is pressed.

⑫ **COUNT. indicator**
Lights when the REMAIN/CLOCK button is pressed so that the VTR enters the counter mode.

⑬ **PRESET indicator**
Lights when the PRESET button is pressed.

⑭ **TIME S. indicator**
Lights when the TIME SEARCH button is pressed.

⑮ **INDEX indicator**
Lights when the INDEX button is pressed.

⑯ **Multi window**

INDICATORS

⑰ **Day indicator**
Shows the current day for the VTR clock and the day when the timer programme will begin.

⑱ **Programme number indicator**
These lamps indicate the programme number into which a programme setting has been entered when setting the programmable timer.

⑲ **Week indicater**
Lights when setting the week.
(I → II → III → IV → WKLY).

⑳ **Programme timer start and end time indicators (ON/OFF)**
Light during timer start and end setting, and when the CFM button is pressed.

㉑ **DT indicator**
Lights when the VTR is in the digital tracking mode.

㉒ **OTR indicator**
Lights during one touch recording.

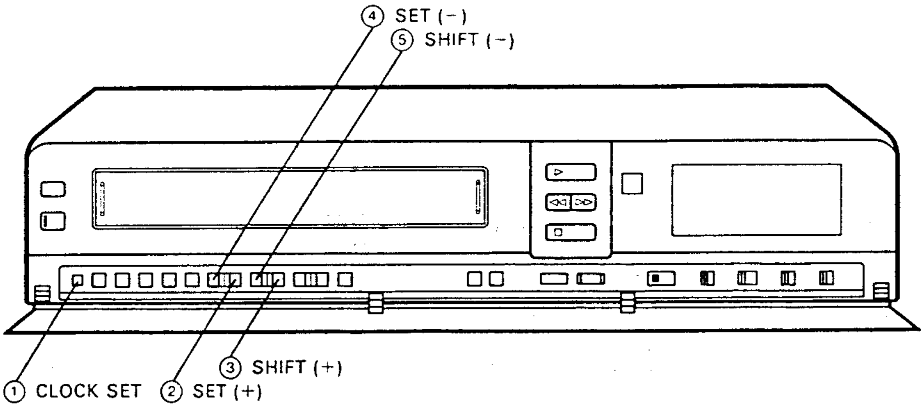
㉓ **Timer indicator**
Lights when the TIMER button is pressed.

㉔ **Channel position indicator**
Lights when selecting the channel positions in channel presetting procedure.

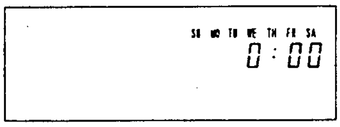
㉕ Shows the channel position number in channel presetting and channel number in timer programming and TV channel selection.

㉖ **AFT indicator**
Lights when the AFT button is pressed while the VTR is in the preset mode.

SETTING THE VTR CLOCK

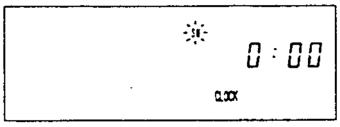


When the power lead is first connected to the AC outlet, or after an interruption of the power supply, the indication SU...SA 0:00 appears, flashing on the display as shown.

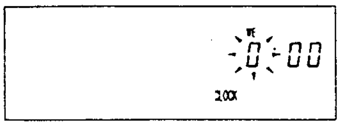


Example: To set for WE 19:25 (Wednesday, 19:25)

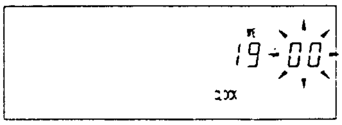
1. Press the CLOCK SET button ①



   Press the SET (+) button ② to indicate "WE" on the indication of the day of the week.
2. Press the SHIFT (+) button ③ to set the flashing position to the hour indication.



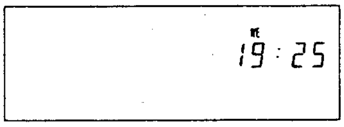
   Press the SET (+) button ② to indicate "19" on the hour indication.
3. Press the SHIFT (+) button ③ to set the flashing position to the minutes indication.



   Press the SET (+) ② to indicate "25" on the munutes indication.

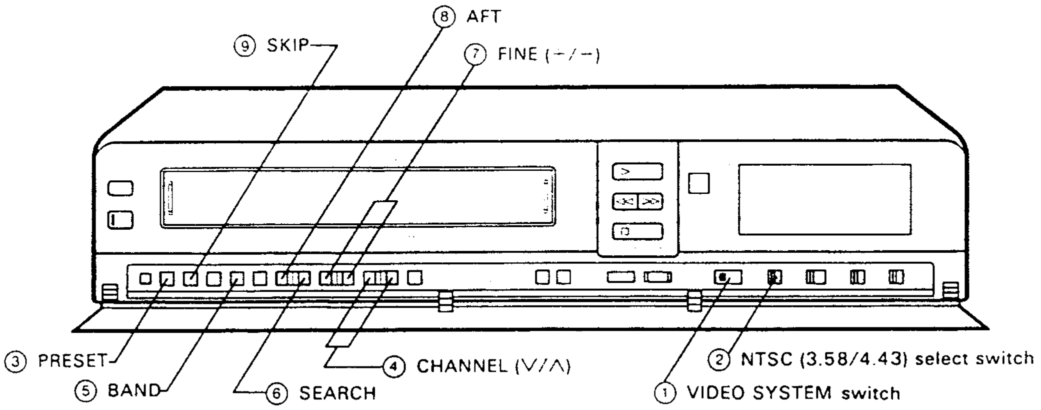
Notes

1. When the SET (+)/(−) button ②, ④ is pressed once, the digit advances by one. When the button is held down, the digits advance rapidly.
2. If you pass the desired time inadvertently, use the SET (−) button ④ to turn back the hour, minutes and day of the week.
3. If you want to change the indication selected after the next setting step is performed, use the SHIFT (−) button ⑤ to return the indication to the previous setting indication.
4. Press the CLOCK SET button ① to display the current time. When the button is pressed, the clock starts from zero seconds.



To synchronize the clock with the radio time signal, press the CLOCK SET button ① on the last pip of the hourly time signal.

CHANNEL SELECTION


⑧ AFT
⑨ SKIP
⑦ FINE (+/−)
③ PRESET
⑤ BAND
④ CHANNEL (∨/∧)
⑥ SEARCH
② NTSC (3.58/4.43) select switch
① VIDEO SYSTEM switch

The tuner built-in this VTR is a VS (Voltage Synthesized) tuner. And it has also an AFT (Auto Fine Tuning) funciton.

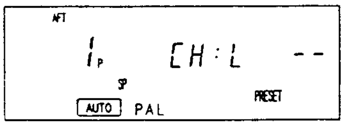
PRESETTING THE CHANNELS

For example: To preset a UHF channel station to position 2.

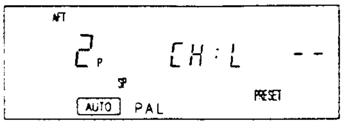
1. Turn on the VTR.
2. Select the VIDEO SYSTEM switch ①
   This switch is set according to the broadcast system in which you receive TV programmes. Normally set it to the "AUTO" position. If the receiving condition is bad and the auto-judging feature cannot be used, set this switch to the manual positions (PAL, MESECAM/SECAM/NTSC).

- When receiving NTSC M signals, set the NTSC (3.58/4.43) select switch ② to the 3.58 position.

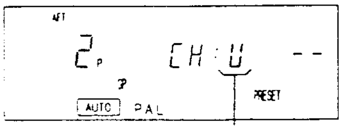
3. Press the PRESET button ③.


AFT
1P CH:L --
AUTO PAL
PRESET

4. Set the channel position to be preset using channel select buttons (up/down) ④ or the number keys on the remote control unit .... "2"

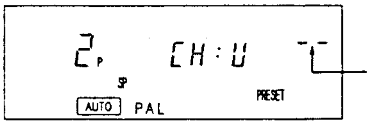

AFT
2P CH:L --
AUTO PAL
PRESET

5. Press the BAND button ⑤ to select V_L, V_H, UHF station. (Select UHF for this exemple.)


AFT
2P CH:U --
AUTO PAL
PRESET

"L" for V_L station
"H" for V_H station
"U" for UHF station

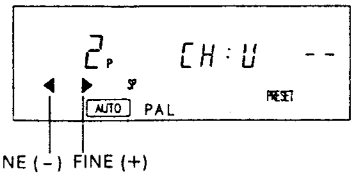
6. Press the SEARCH button ⑥. Scanning starts from the lower channel. During scanning, the AFT indicator goes off.


2P CH:U
AUTO PAL
PRESET

During scanning, these indicators move from the lower position to the upper position.

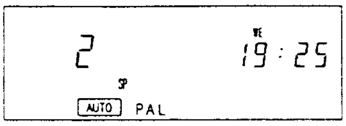
When the received channel is scanned, the AFT indicator lights up and scanning stops.
Press the SEARCH button ⑥ repeatedly untill the desired channel is scanned.

7. If a good picture does not appear after searching, make fine adjustment using the FINE (+/−) buttons ⑦.


2P CH:U --
AUTO PAL
PRESET
FINE (−)
FINE (+)

Adjust the channel so that you can obtain the best position picture. When the AFT button ⑧ is pressed, the channel returns to a position where the channel has stopped during auto searching operation.

8. Repeat steps 4 to 7 (up to 48 positions).
9. Press the PRESET button ③.


2 19:25
AUTO PAL

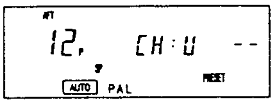
CHANNEL SELECTION

Channel skip operation

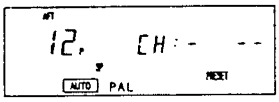
This function enables you to skip the channel positions you do not want to select when selecting the channel positions with the channel select buttons (up/down).

1. Press the PRESET button ③.
2. Select the channel postion you want to skip with the channel select buttons (up/down) ④.
3. Press the SKIP button ⑨. The indications shown below will appear with the SKIP button on or off.

Channel skip off



Channel skip on

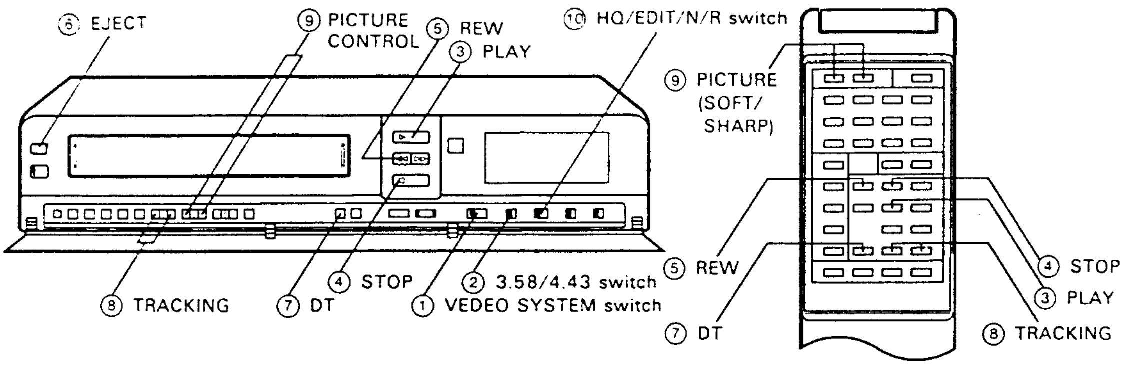


4. Press the PRESET button ③.

Notes

1. Skip operation cannot be performed in the channel setting mode.
2. Direct channel selection is also possible even in the channel skip operation mode.
3. To release the channel skip function, perform steps 1 through 4 as for the channel skip setting operation.

PLAYBACK



1. Insert a recorded cassette with a safety tab. The power will be turned on.

   Notes

   When a cassette without safety tab is inserted, the VTR automatically starts playback and rewinds the tape at the end of the tape and ejected. After ejection, the VTR will turn off automatically.
2. Set the VIDEO SYSTEM switch ① according to the video format of tape to be played. Normally set to the "AUTO" position. When the condition of the tape is bad and the type of the tape cannot be judged automatically, use the manual operation and set the switch to a corresponding video system position. For NTSC tape playbak, there are two types: 3.58 and 4.43. set the 3.58/4.43 switch ② to the correct position according to a TV set used.
3. Press the PLAY button ③.
   Playback will begin.
   The indicator "DT" (DIGITAL TRACKING) blinks in the display panel, and the optimum tracking point is automatically set.
4. When playback is finished, press the STOP button ④.
5. Press the REW button ⑤ to rewind the tape.
6. Press the EJECT button ⑥ to take out the cassette.

TRACKING CONTROL ADJUSTMENT

DIGITAL TRACKING adjustment

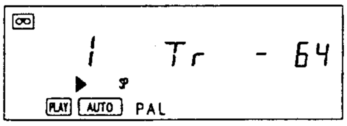
When the DT switch ⑦ is pressed in the play mode, the "DT" indicator lights in the display panel and the optimum tracking point is automatically set.

While the DT indicator is blinking, playback picture and sound may be distorted due to that tracking is being adjusted.

If you cannot obtain the best possible tracking point using the digital tracking function, adjust tracking by manual tracking operation.

MANUAL TRACKING ADJUSTMENT

Pressing the TRACKING button ⑧ in the play mode will release the VTR from the digital tracking status. The VTR will then enter the manual tracking mode.



Tracking can be adjusted within the range of −64 < 0 > 64.

Adjust the tracking point so that the best possible picture and sound can be obtained. When the two TRACKING buttons are pressed simultaneously, the tracking point is set to the center "00".

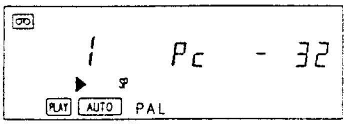
When the DT switch ⑦ is pressed, the VTR is set to the DIGITAL TRACKING mode again.

Note

When you play back a tape which has been recorded with another VTR, the noise on the screen may not be completely removed depending on the tape used.

PICTURE SHARPNESS ADJUSTMENT

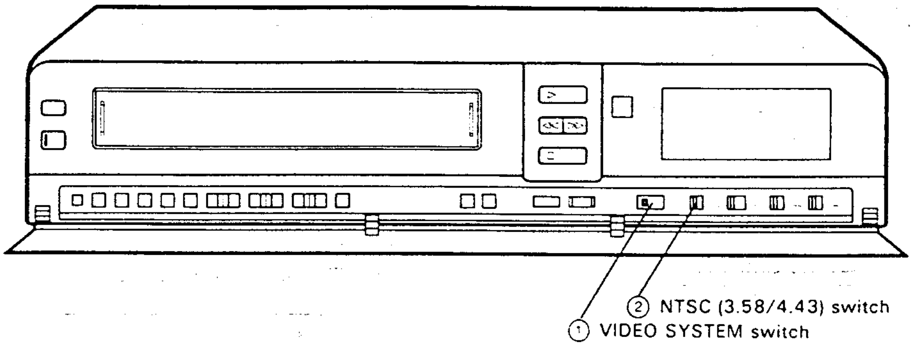
When the PICTURE CONTROL button ⑨ is pressed in the play back mode, the picture can be made softer and sharper.



Picture sharpness can be adjusted within the range of −32 < 0 > 32.

When the two PICTURE CONTROL buttons are pressed simultaneously, the picture sharpness point is set to the center "00".

RECORDING



BEFORE STARTING TO RECORD

The VIDEO SYSTEM switch ① and the NTSC (3.58/4.43) switch ② are switches that select received broadcast systems and tape recording formats.
Check these switches before starting recording operatin.

AUTO...Use this position for normal operaiton.

PAL/MESECAM, SECAM, NTSC3.58, NTSC4.43

....Use a corresponding broadcast system when you record a TV programme in a weak signal area where the broadcast signal cannot be judged with the switch set to AUTO.

- When you receive and record an NTSC M programme, set the NTSC (3.58/4.43) switch ② to the 3.58 position.

POSITION OF THE VIDEO SYSTEM SWITCH AND INDICATOR FOR RECORDING BROADCAST SIGNAL or LINE IN VIDEO SIGNAL

Broadcast system	LINE in. video signal	VIDEO SYSTEM SELECTION			Tape recording video format	Indicator
		Mode	VIDEO SYSTEM switch position	NTSC (3.58/4.43)		
PAL I PAL B/G PAL D	PAL	AUTO	AUTO	——	PAL	PAL
		MANUAL	PAL/MESECAM	——	PAL	PAL
SECAM B/G SECAM D/K.K1	SECAM	AUTO	AUTO	——	MESECAM	MESECAM
		MANUAL	PAL/MESECAM	——	MESECAM	MESECAM
			SECAM	——	SECAM	SECAM
NTSC M	NTSC 3.58	AUTO	AUTO	3.58	NTSC	NTSC 3.58
		MANUAL	NTSC	3.58	NTSC	NTSC 3.58
——	NTSC 4.43	AUTO	AUTO	4.43	NTSC	NTSC 4.43
		MANUAL	NTSC	4.43	NTSC	NTSC 4.43

- This VTR cannot receive a SECAM L programme (broadcast in France).
  A SECAM signal coming through the line input jacks (phono jacks), however, can be recorded with this VTR.

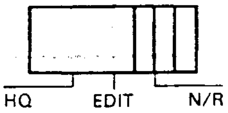
Note

If the VIDEO SYSTEM switch is set to the "AUTO" position when recording a SECAM B/G or D/K.K1 programme, or when recording SECAM signals through the line input terminal, the tape is recorded in MESECAM. If you want to record in the proper SECAM, set this switch to the SECAM position.

PLAYBACK

N/R (NOISE REDUCER) SWITCH

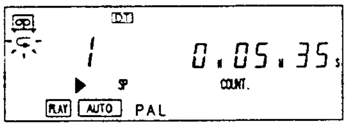
When playing back a rental video or an overlly copied tape which has a lot of noise in the video picture, you may reduce this noise by placing the HQ/EDIT/N/R switch ⑲ to the "N/R" pisition. In normal use, set this switch to the "HQ" position.



REPEAT PLAYBACK

When this function is used during playback, the VTR automatically rewinds the tape a its end and starts play back from the beginning of the tape. (Maximum of ten repeat play operations)
After repeat playback is completed, the VTR enters the stop mode.

1. Press the PLAY button ③ (for about 6 seconds).
   The VTR enters the repeat playback mode.



2. After playing back to the end, the VTR automatically rewinds the tape and starts playback from beginning.
3. To resume normal playback, press the PLAY button ③ for about 6 seconds.

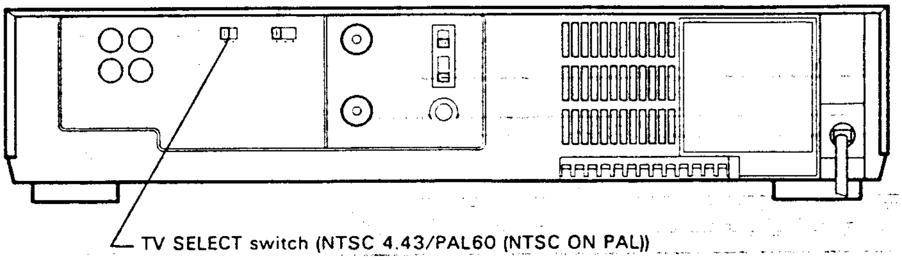
SETTING POSITIONS OF THE VIDEO SYSTEM SWITCH AND OUTPUT VIDEO SYSTEMS, DEPENDING ON TAPES PRE-RECORDED IN DIFFERENT TYPES OF VIDEO FORMAT

Select the appropriate position with the VIDEO SYSTEM switch so that tapes pre-recorded in different types of video format can be played back. The following table shows output video systems.

Video format of pre-recorded tape	VIDEO SYSTEM switch		Output color	
	MODE	POSITION	Line output (Phono type)	RF output (rear panel)
PAL	AUTO	AUTO	PAL	PAL G, I, K
	MANUAL	PAL/MESECAM		
MESECAM	AUTO	AUTO	SECAM	SECAM G, K
	MANUAL	PAL/MESECAM		
SECAM	AUTO	AUTO	SECAM	SECAM G, K
	MANUAL	SECAM		
NTSC	AUTO	AUTO · NTSC 3.58	NTSC 3.58	NTSC M
		AUTO · NTSC 4.43	NTSC 4.43	NTSC G
	MANUAL	NTSC · NTSC 3.58	NTSC 3.58	NTSC M
		NTSC · NTSC 4.43	NTSC 4.43	NTSC G

- PAL recorded tape....Commercially available tapes pre-recorded in PAL system, and tapes on which PAL-B/G, PAL-I and PAL-D programmes have been recorded.
- MESECAM recorded tape....Tapes on which SECAM-B/G and SECAM-D/K.K1 programmes have been recorded with a MESECAM system VTR.
- NTSC recorded tape....Commercially available tapes pre-recorded in NTSC system, and tapes on which NTSC-M programmes have been recorded.

NOTES ON PLAYBACK



TV SELECT switch

This switch is provided to play back NTSC recorded cassette tapes with an NTSC 4.43 TV set or a PAL system TV set. Set this switch to the "NTSC 4.43" or "PAL 60 (NTSC ON PAL)" position. This VTR can play back NTSC recorded cassette tapes with a PAL video system TV set.

- PAL 60 (NTSC ON PAL)....Used to view an NTSC recorded tape with a PAL system TV set.
  In this case, the position of the VIDEO SYSTEM switch on the front panel should be placed at NTSC 4.43.
- NTSC 4.43....Used to view an NTSC recorded tape with an NTSC 4.43 system TV set. When you do not view an NTSC recorded tape with a PAL system TV set, the switch should be placed at this position.

Playback of an NTSC tape recorded in the LP mode

With this VTR an NTSC tape recorded in the LP mode can be played back. But there are some points to be observed.

1. The quality of the playback picture is not guaranteed.
2. Special playback cannot be performed properly.
3. Tracking adjustment is always required when the tape is played back in the manual tracking mode.
4. The indicator "LP" appears in the display panel.

Notes when using a PAL TV set for NTSC playback:

1. Use a TV set compatible with PAL video signals of PAL 60 (525 lines).
   When the TV set, that is not compatible with PAL video signals of PAL 60, is used (when the TV set, that is compatible only with PAL video signals of PAL 50 (625 lines), is used) NTSC playback pictures may roll up and down. This is not malfunction of the VTR or the TV set. If your TV set is equipped with a V-HOLD control, it may be possible to stop the rolling of pictures by adjusting this control.

   About PAL 50 and PAL 60 of PAL video signals:
   - PAL 50: is a normal signal and its PAL video signal is 50 fields (625 lines).
   - PAL 60: is a special signal and its PAL video signal is 60 fields (525 lines).

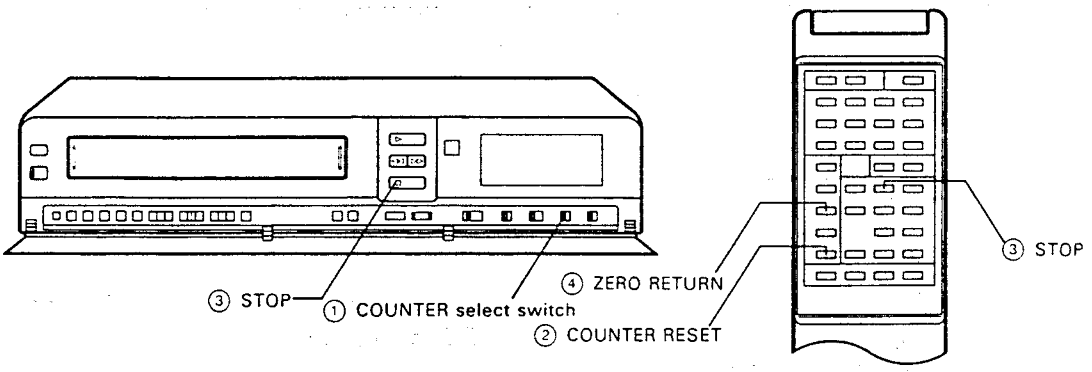
   Some TV sets operate properly only with PAL 50 signals, some TV sets operate properly with both PAL 50 and PAL 60 signals.
   Therefore, if your TV set is switchable between PAL 50 (625 lines)/PAL 60 (525 lines), you can view an NTSC recorded tape in the PAL colour system with your own TV set.

2. Depending on the TV set used, the picture may shrink vertically and black bars may appear both at the top and bottom of the screen.
   This is not an indication of malfunction.
3. The special playback operations (double speed playback, still playback etc.) may produce a skewed image and a lot of noise on the picture.
4. If the tape prerecorded in the SP mode is played back in the picture search mode, the picture is reproduced with no colour.

Note

For viewing an NTSC recorded tape, we recommend you to use an NTSC 3.58 or NTSC 4.43 TV set.

LINEAR TIME COUNTER AND ZERO RETURN

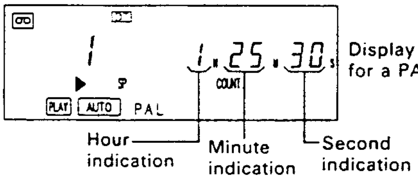

③ STOP
① COUNTER select switch
④ ZERO RETURN
② COUNTER RESET
③ STOP

LINER TIME COUNTER

This VTR utilizes the linear time counter system. The linear time counter indicates tape run length on the display by the second.

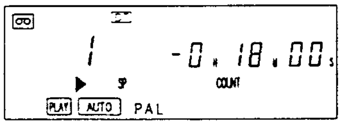
The linear time counter installed in this VTR should be set, according to the types of video format of tapes to be recorded from or to be played back, with the COUNTER select switch (PAL, SECAM, MESECAM/ NTSC) ①.

When the tape runs one hour twenty-five minutes thirty seconds:


1.25.30
COUNT
SP
PLAY
AUTO
PAL
Hour indication
Minute indication
Second indication

Display example is for a PAL recorded tape.

When the tape is rewound after 0H00M00S:


-0.18.00
COUNT
SP
PLAY
AUTO
PAL

Notes

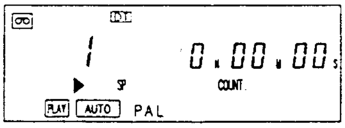
1. When the cassette is removed by pressing the EJECT button, the linear counter will return to 0H00M00S.
2. The counter does not work at the unrecorded section.

ZERO RETURN

This function is very useful to easily find the desired scenes to be replayed later.

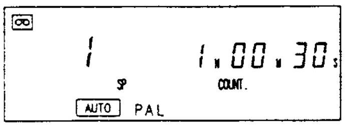
You can set the VTR so that the tape stops around 0H00M00S of the counter reading during rewinding and fast forward mode.

1. Press the COUNTER RESET button ② on the remote control unit at the point where the desired scenes to be replayed later begins while in the record and play modes.

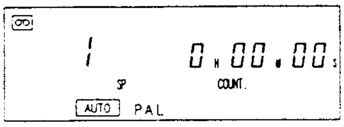

0.00.00
COUNT
SP
PLAY
AUTO
PAL

Display example is for a PAL recorded tape

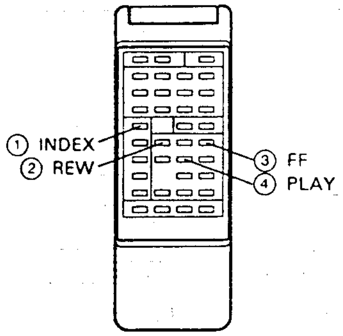
2. Press the STOP button ③ to stop the tape after the playing or recording is completed.


1.00.30
COUNT
SP
AUTO
PAL

3. Press the ZERO RETURN button ④.
   The tape will be rewound around "0H00M00S" of the counter reading. When the ZERO RETURN button is pressed after the tape is rewound before counter reading of "0H00M00S", the tape will be fast forwarded around "0H00M00S" before stopping.


0.00.00
COUNT
SP
AUTO
PAL

INDEX SEARCH OPERATION



The VTR has VHS index search system funciton.
This system performs the index search or skip search, using the index signal marked on the tape.

Index Seach
Each time the VTR detects an index signal in the fast-forward or rewind mode, it plays back the beginning of each programme for 5 seconds.

Skip Seach
When the VTR detects the selected index signal in the fast-forwrd or rewind mode, it automatically enters the play-back mode.

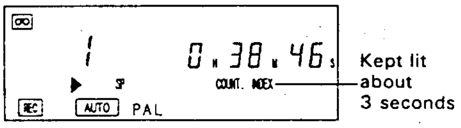
MARKING THE INDEX SIGNALS

Automatic marking
When recording starts from the stop mode, an index signal is automatically marked on the tape. An index signal is also automatically marked when timer recording and one touch recording starts.

Note

When the VTR enters the pause mode during recording and recording restarts, no index signal is marked.

Manual marking
Press the INDEX button ① on the remote control unit at the point you want to mark an index signal on the tape during recording, timer recording or one touch recording.



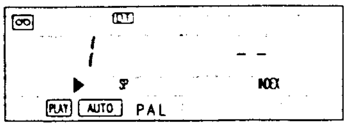
Kept lit about 3 seconds

Notes

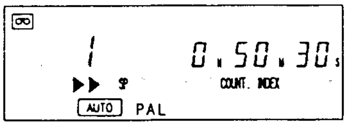
1. The index signal may not be able to be recorded on sections switched between SP and LP•EP.
2. The programme that has been registered at the very beginning of the tape, may not be correctly searched with the index search operation.
3. Press the INDEX button at an interval of more than one minute, during recording. (3 minutes are required in the LP•EP. mode.)

INDEX SEARCH

1. Press the INDEX button ① on the remote control unit in the stop or playback mode.



2. Press the REW button ② or FF button ③ within 10 seconds. The tape will stop at the section recorded with index signal and then played back for five seconds.



(The above display is shwon in the FF mode.)

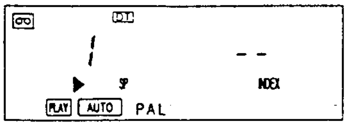
3. Press the PLAY button ④, when your desired programme comes on.

Note

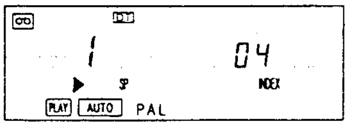
If you record index signals on the tape pre-recorded on another VTR, that recording may become blurred, and index search may not be performed correctly.

SKIP SEARCH

1. Press the INDEX button ① on the remote control unit in the stop or playback mode.



2. Specify the index number with the number keys on the remote control unit within 10 seconds.



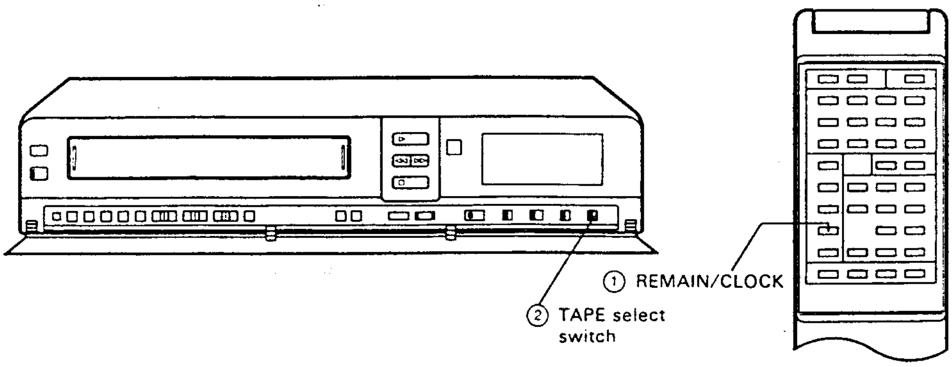
(The above display is shown when the index number is specified to 4.)

3. Press the REW button ② or FF button ③ within 10 seconds. The tape will stop at the section specified with the index number and be played back automatically.

Notes

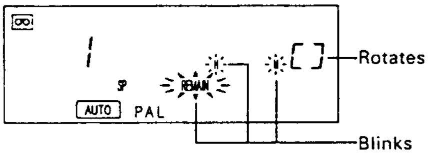
1. The index number specification can be up to 99.
2. The number of the index display will decrease by one each time the index signal is skipped.
3. In some cases it may not be possible to skip search a programme that has been registered at the very beginning of the tape.

TAPE REMAINING DISPLAY

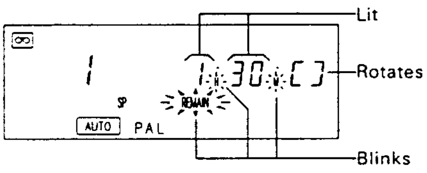


TAPE REMAINING DISPLAY IN THE STOP MODE

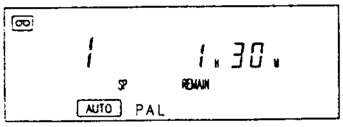
When the REMAIN/CLOCK button ① is pressed with the counter display shown in the display panel, the VTR enters the tape remaining display mode. While the display shows the clock time display, pressing the REMAIN/CLOCK button will let the VTR enter the counter display mode.
When the button is pressed again, the display shows the tape remaining display.
While counting the ramaining time:
The display changes to the count mode. (Note: The tape remaining time is displayed for about 5 seconds.)



The counting is completed:
The tape remaining time will be displayed. The tape will be rewound to the original position.



When the tape is rewound to the original position. The display returns to the current time display.



Note

Pressing the button again after the calculation is done will display the contents read. This is not a malfunction.

TAPE REMAIN DISPLAY IN THE RECORDING OR PLAY MODE

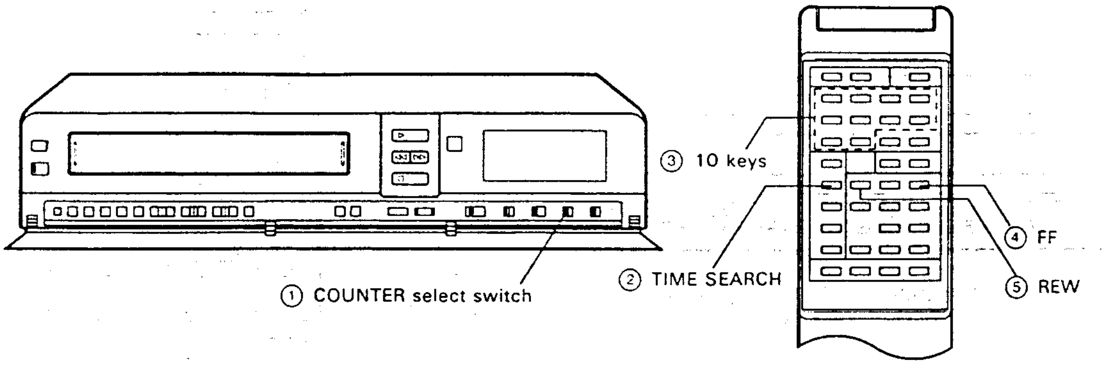
The remaining time on the tape can even be displayed during recording or playback.

1. The tape remaining time is automatically calculated during recording or playback, and is displayed by pressing the REMAIN/CLOCK button ①.
2. If the REMAIN/CLOCK button ① is pressed immediately after beginning recording or playback, the tape remaining time will be displayed after about half a minute.

Notes

1. Set the TAPE select switch ② to the correct position depending on the tape to be used.
   PAL/MESECAM/SECAM mode
   Use the E-180 position when using a shorter tape than an E-180 video cassette.
   Use the E-240 position when using an E-240 video cassette.
   NTSC mode
   Use the T-120 position when using a shorter tape than a T-120 video cassette.
   Use the T-160 position when using a T-160 video cassette.
2. While in the fast forward or rewing mode, even if the REMAIN/CLOCK button ① is pressed, the counter display will not change to the tape remaining display.
3. The tape remaining display shows the approximate time remaining on the tape.

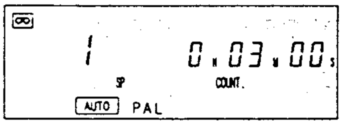
TIME SEARCHING


③ 10 keys
④ FF
⑤ REW
② TIME SEARCH
① COUNTER select switch

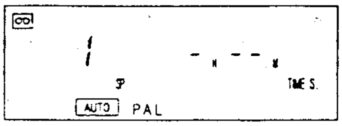
This feature forwards or rewinds the tape by the amount of the specified time from the current tape time indication, in the play or stop mode.
Set the COUNTER select switch (PAL, SECAM, MESECAM/NTSC) ① according to the video format of the tape to be played back.

> **Example:**
> Tape...PAL recorded tape
> VTR operation mode...Stop mode
> setting time...to advance by one hour fifteen minutes

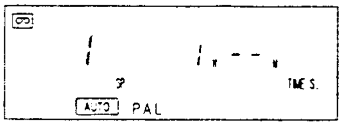
Initial display


1 0.03.00
SP
COUNT.
AUTO
PAL

1. Press the TIME SEARCH button ② on the remote control unit.
   Perform step 2 within ten seconds.

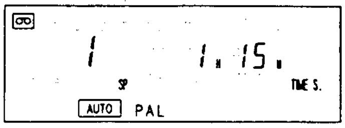

1 -.--.
SP
TIME S.
AUTO
PAL

2. Press the "1" key of the 10 keys ③ to set the hour time.
   Perform step 3 within ten seconds.

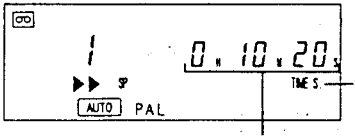

1 1.--.
SP
TIME S.
AUTO
PAL

When setting the time searching time of within one hour, input zero hour with the "0" key.

3. Press the "1" key then "5" key of the 10 key ③ to set the minutes time
   Perform step 4 within ten seconds.


1 1.15.
SP
TIME S.
AUTO
PAL

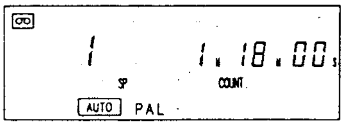
4. Press the FF button ④ or the REW button ⑤ to forward or rewind the tape. For this example, press the FF button ④. Time searching starts.


1 0.10.20
▶▶ SP
TIME S.
AUTO
PAL

Blinks while searching

The set time counts down when searching begins.

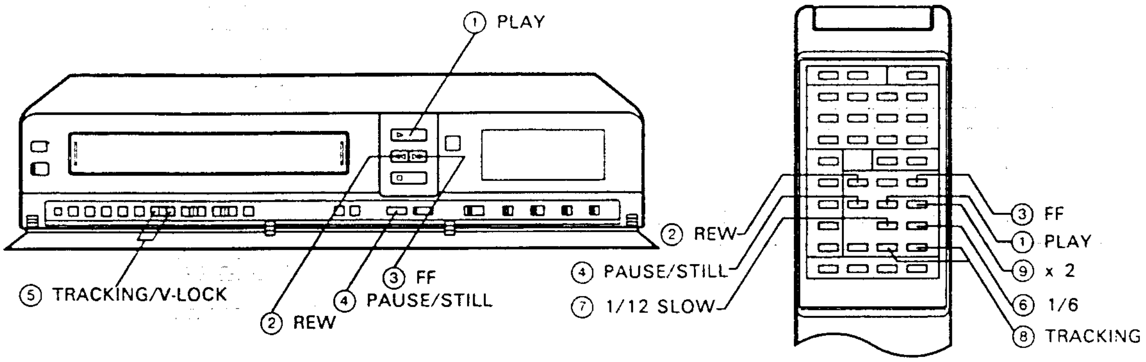
5. Upon completing searching the set time the VTR enters the stop mode, showing the reading of about OHOOMOOS in the display.


1 1.18.00
SP
COUNT.
AUTO
PAL

Notes

1. In the play mode, time searching is performed in the forward picture search and reverse picture search mode.
   After time searching has finished at the counter reading of about OHOOMOOS, the VTR enters the normal play mode automatically.
2. The time display may show a not accurate but approximate time indication.

SPECIALIZED PLAYBACK



PICTURE SEARCH

1. Press the PLAY button ①.
2. When the REW button ② or FF button ③ is pressed, the picture moves quickly (about 7 times the normal speed in PAL/SECAM/MESECAM mode and 5 times the normal speed in NTSC mode) in reverse or forward direction, and you can search for the desired parts of a programme.

Notes

1. When playing back recorded tape in the picture search mode, the skewed picture may appear and/or colour may disappear.
2. During picture search operation, if the picture rolls vertically on the TV screen, adjust the V-HOLD knob on the TV set.
3. During the picture search operation, the sound will be muted.

STILL PICTURE

1. Press the PLAY button ①.
2. To stop the tape momentarily or to watch a still picutre during playback press the PAUSE/STILL button ④.
3. Press the PAUSE/STILL button ④ again to release the still picture and return to normal playback.
   If noise appears in the still picture, perform manual tracking adjustment in the slow play mode to set the tracking to the best point. Then, play a still picture.

STABILITY OF STILL PICTURE

When the PAUSE/STILL button ④ is pressed and the picture is slightly distorted and flickered, press the TRACKING/V-LOCK button ⑤ to adjust the stability of the picture. Doing this may reduce this problem.

Notes

1. The still mode will cease automatically after a lapse of approximately 5 minutes. The VTR will return to PLAY from STILL.
2. Even the tape pre-recorded with another VTR is played back in the still mode and adjusted with the TRACKING/V-LOCK buttons, the distortion of the picture might still remain.
3. The NTSC tape playback in the still mode may cause the reproduced picture to flicker on the TV screen.

FRAME ADVANCE

1. Press the PLAY button ① (in play mode).
2. Press the PAUSE/STILL button ④ (in still mode).
3. Press the PLAY button ①. One press on the PLAY button ① will advance one frame on the tape.
4. Release the PLAY button ① and then press the PAUSE/STILL button ④. The VTR returns to normal playback.

SLOW PLAY

Press the SLOW button allows you to play back the picture at 1/6 or 1/12 the speed of normal playback.

1. Press the PLAY button ①.
2. Press the 1/12 SLOW button ⑦ or 1/6 SLOW button ⑥.
3. Press the PLAY button ① again to resume normal playback.

STABILITY OF SLOW PICTURE

When noise appears in the slow mode, adjust the TRACKING/V-LOCK buttons ⑤ on the VTR or the TRACKING buttons ⑧ on the remote control unit for better picture playback.

Notes

1. The slow mode will cease automatically after a lapse of approximately 5 minutes. The VTR will return to PLAY from SLOW.
2. Even the tape pre-recorded with another VTR is played back in the slow mode and adjusted with the TRACKING/V-LOCK buttons, noise might still remain in the slowplay pictrure.

DOUBLE SPEED PLAYBACK

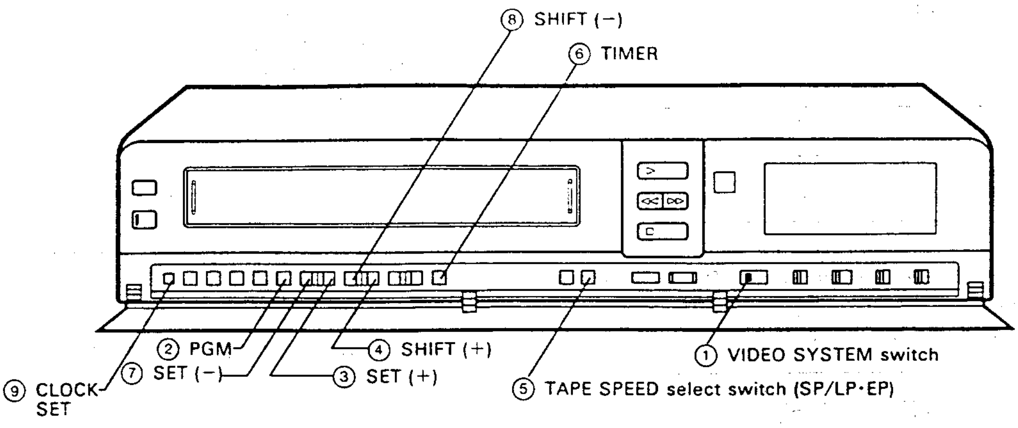
Pressing the X2 button allows you to play back the picture at a speed double the normal playback.

1. Press the X2 button ⑨ in the play, stop or slow mode.
2. Press the PLAY button ① again to return to the normal play mode.

Note

- When a cassette tape prerecorded in the LP mode of PAL, SECAM or MESECAM is played back in the still, slow, frame or double speed play mode, the picture may be reproduced without color, the color is of poor quality.
- DT (DIGITAL TRACKING) can function only in the play mode, this function does not activate in the specialized playback mode.

TIMER RECORDING



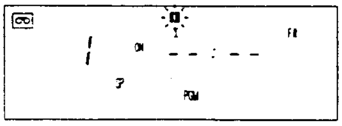
The timer in this VTR can hold eight preset programmes over a 4 week (28 days) period. These programmes may be for one time recordings, recording at the same time every day or recording on the same day of the week. The clock has a 24 hour format. This VTR is capable of 28-day timer setting, and is designed to start timer recording when the TIMER button is pressed.

OPERATING OUTLINE

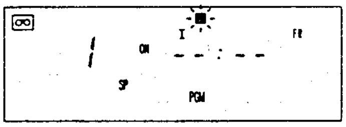
- SHIFT (+/−) button
  This button is used to move the programming item while making a programme. The blinking position moves.
- SET (+/−) button
  This button is used to change the programming contents of the blinking position while making a programme.
- Be sure to check the clock setting is completed before doing timer recordings.
- Be sure to check the cassette for recording, has a safety tab.

Example: To preset channel 25 in programme 2 from 13:30 to 14:20 of the next week on Tuesday, in SP mode. (Today is Friday at 9:00)

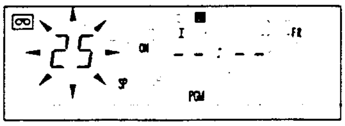
1. Set the VIDEO SYSTEM switch ① according to the broadcast systm of the programme to be recorded. (For more details, refer to section "RECORDING" on page 17.)
2. Press the PGM button ②, to enter the timer programme mode position.



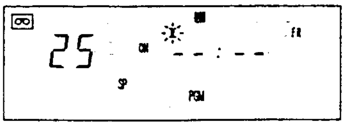
3. Press the SET (+) button ③ to set "2" position.



4. Press the SHIFT (+) button ④. The channel indication will be flashing. Set the channel to "25" with the SET (+) button ③.



5. Press the SHIFT (+) button ④. The week indication will be flashing. Set the week to the "II" position with the SET (+) button ③.



Pressing the SET (+) ③ will change the week indication from I → II → III → IV → WKLY to DAILY cyclically.

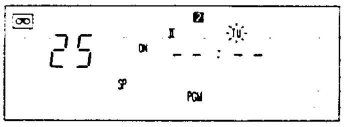
When the week indication is set to WKLY (WEEKLY), you can record the programme of the same time every week. When the week indication is set to DAILY (the indication of all the days such as SU, MO, TU, WE, TH, FR, and SA will light), you can record the programme of the same time every day.

Notes

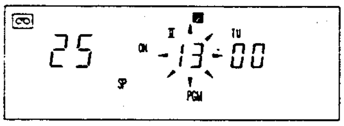
1. If you pass the desired time or setting position inadvertently, use the SET (−) button ⑦ to display the correct indication.
2. If you want to return to the previous setting step, use the SHIFT (−) button ⑧.

TIMER RECORDING

6. Press the SHIFT (+) button ④. The day indication will be flashing. Set the day to the "TU" position with the SET (+) button ③.



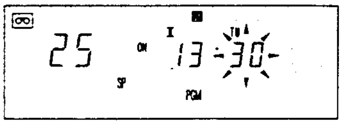
7. Press the SHIFT (+) button ④. The on time hour indication will be flashing. Set the on time hour to "13" with the SET (+) button ③.



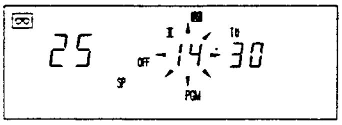
Note

When the SET (+) button ③ or SET (−) button ⑦ is pressed once, the current time will be displayed on the on time indication.

8. Press the SHIFT (+) button ④. The on time minutes indication will be flashing. Set the on time minutes to "30" with the SET (+) button ③.

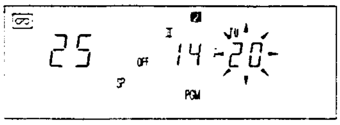


9. Press the SHIFT (+) button ④. The off time hour indication will be flashing. Set the off time hour to "14" with the SET (+) button ③.

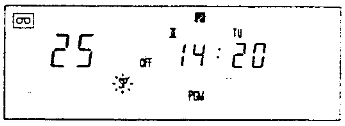


When the SET (+) button ③ or SET (−) button ⑦ is pressed once, the set time for on time will be displayed as off time.

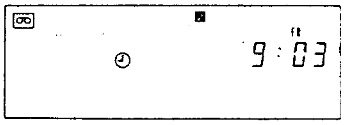
10. Press the SHIFT (+) button ④. The off time minutes indication will be flashing. Set the off time minutes to "20" with the SET (+) button ③.



11. Press the SHIFT (+) button ④.
Then select the tape speed (SP or LP·EP) with the TAPE SPEED select button ⑤ or SET (+) button ③. Set it to the SP position.

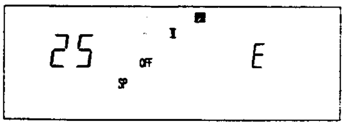


12. Press the TIMER button ⑥.

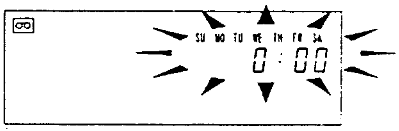


Notes

1. When no cassette is loaded, timer recording is not possible.
In this case, the "E" indicator is displayed while the TIMER button ⑥ is pressed.

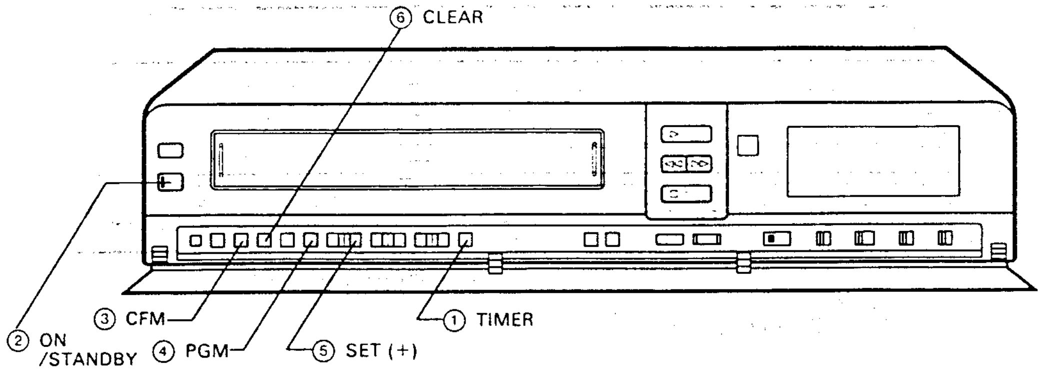


2. If the cassette tab has been removed, timer recording is also not possible. At this time, the cassette is ejected automatically.
3. When the clock is flashing after a power interruption as shown below, the preset programmes become ineffective. Reset the VTR clock to the current time with the CLOCK SET button ⑨ and do the programme setting from the beginning.



4. To proceed to another programme setting after step 9 press the SHIFT (+/−) buttons ④ or ⑧ to select the programme number position and set the programme number with the SET (+) button ③.
5. When you want to stop programme setting, press the PGM button ②.
The clock display is shown.
6. Timer setting is possible even in standby mode.

ADDITIONAL INFORMATION FOR TIMER RECORDING



TO USE THE VTR AFTER SETTING THE PROGRAMMABLE TIMER

1. Press the TIMER button ① to release the timer mode.
2. Press the ON/STANDBY button ② to turn on the VTR.
3. After use, be sure to press the CFM button ③ to verify the contents of the stored programmes.
4. To enter the timer mode again, press the TIMER button ①.

TO CHANGE TIMER PROGRAMME DATA

1. Press the TIMER button ① to release the VTR from the timer recording mode. The timer indicator (⌚) goes off.
2. Press the PGM button ④ to enter the timer programme operation mode.
3. Select the programme number to be changed with the SET (+) ⑤ and change programming data.
4. Press the PGM button ④ again. To enter the timer recording mode, press the TIMER button ①.

TO CANCEL THE TIMER PROGRAMME

1. Press the TIMER button ① to release the VTR from the timer recording mode. The timer indicator (⌚) goes off.
2. Press the PGM button ④ to enter the timer programme operation mode.
3. Specify the programme where the programme data to be cancelled are placed, with the SET (+) button ⑤.
4. Press the CLEAR button ⑥. The timer off time and channel are also erased.

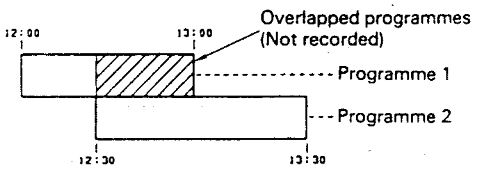
TO CHECK THE TIMER PROGRAMME

The following method is available to check the data preset in the timer programme.

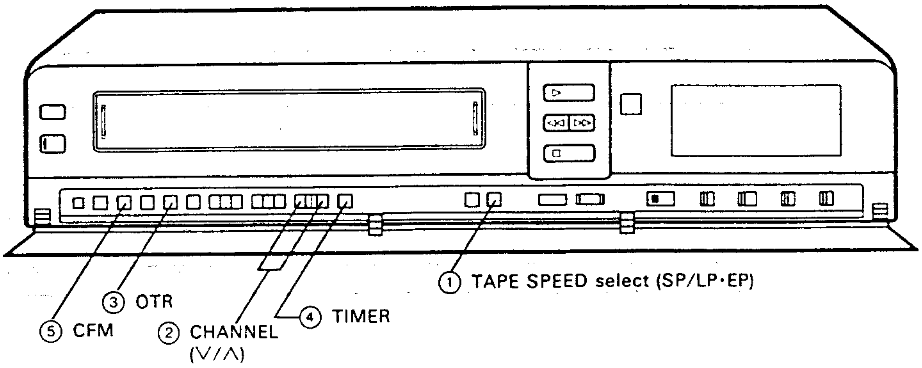
1. Press the CFM button ③.
   The fluorescent display will show the contents of programmes 1 througth 8 (start time and end time) that were previously stored continuously at an interval of about five seconds and return to the original display.
   When any effective programme data has not been memoried, the "E" indicator appears in the display.

PROGRAMME OVERLAPPING

Be careful not to overlap the preset times.
If you happen to overlap the preset programmes, start time has priority in execution, and the overlapped programme will not be recorded. See figure below.



ONE TOUCH TIMER RECORDING

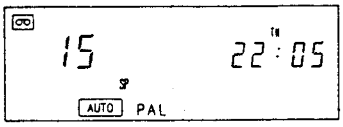

① TAPE SPEED select (SP/LP•EP)
③ OTR
④ TIMER
⑤ CFM
② CHANNEL (V/Λ)

This VTR unit features a one touch recording (OTR) function. This function allows you to record at 30 minute periods, for up to 4 hours.
After the recording is completed, the power goes off automatically.
Also, when setting the timer, the off time can be set at 30 minute periods. The One Touch Recording (OTR) mode takes priority over other VTR operation modes. For example, when the OTR mode is activated while the VTR is in the timer mode, the VTR will automatically return to the timer mode after the OTR mode is completed.

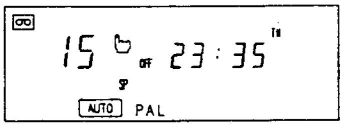
OTR OPERATION

Example: To record channel 15 starting from now for 1-1/2 hours at a current time on Thursday, 22:05.

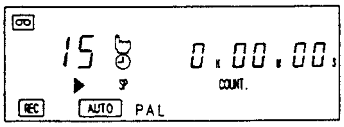
1. Set the recording speed (SP/LP•EP) with the tape speed select button ①.
2. Select channel 15 by pressing channel select buttons (up/down) ②.


15
22:05
SP
AUTO PAL

3. Press the OTR button ③ to set the recording time.
When the OTR button ③ is pressed once: 22:35 (30 minutes).
4. When the OTR button ③ is pressed twice: 23:05 (1 hour)
When the OTR button ③ is pressed three times: 23:35 (1 hour and 30 minutes)


15
OFF
23:35
SP
AUTO PAL

5. Press the TIMER button ④ within 10 seconds.


15
0.00.00
COUNT.
SP
REC
AUTO PAL

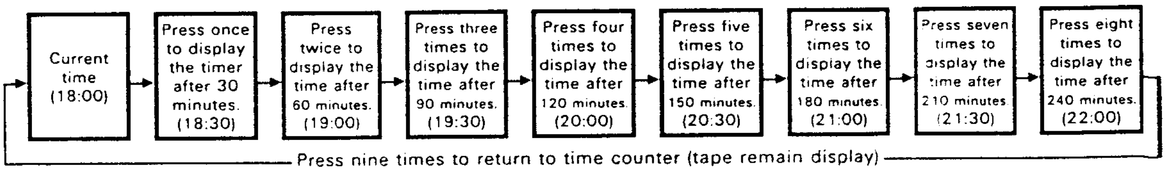
Notes

1. Thirty minutes are added every time the OTR button ③ is pressed, for up to 4 hours (eight times). (The one touch timer can only be set in 30-minute units.)
2. One-Touch Recording does not function while the VTR is in the timer programme confirmation mode, channel setting mode and clock setting mode.
3. When the CFM button ⑤ is pressed while the VTR is in the one-touch timer recording mode, the VTR shows the programme ending time (OFF).

Error indication

When the TIMER button ④ is pressed without setting timer on/off time, or without a cassette in the compartment, the "E" indicator lights (while the TIMER button ④ is pressed).

- Each time you press the OTR button ③, the indication will change as follows.

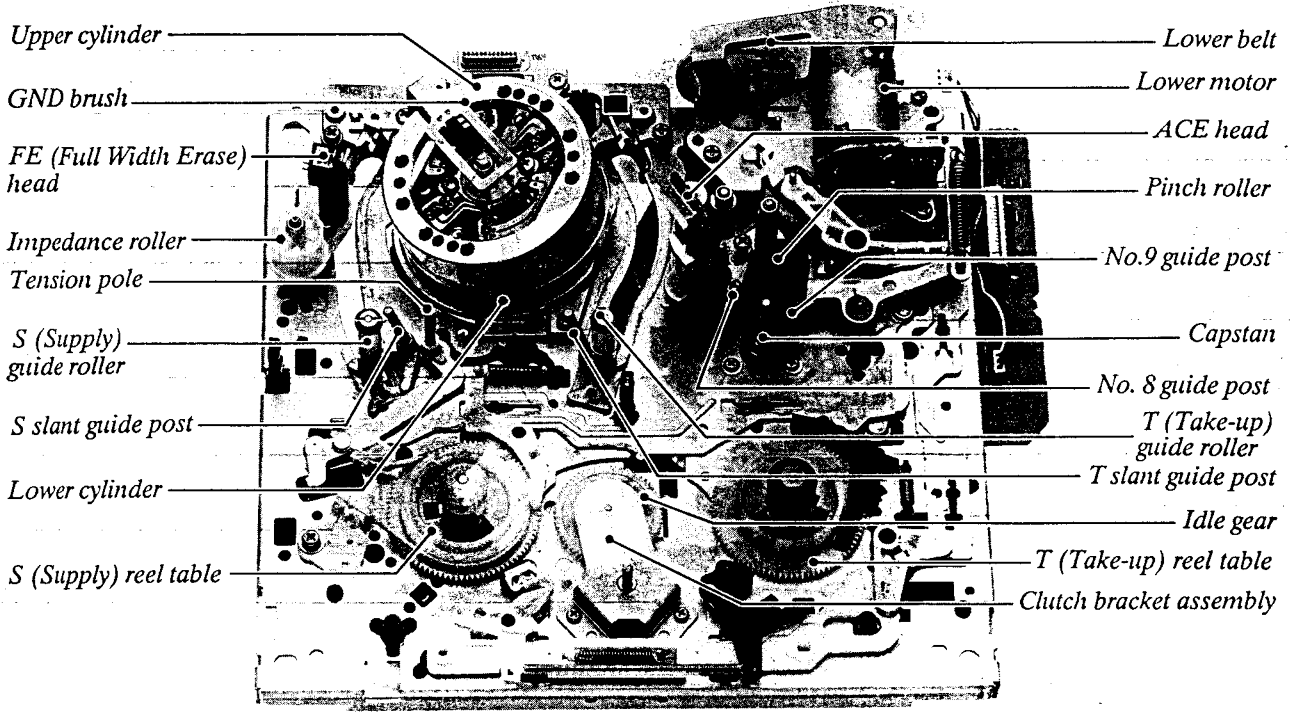

Current time (18:00)
Press once to display the timer after 30 minutes. (18:30)
Press twice to display the time after 60 minutes. (19:00)
Press three times to display the time after 90 minutes. (19:30)
Press four times to display the time after 120 minutes. (20:00)
Press five times to display the time after 150 minutes. (20:30)
Press six times to display the time after 180 minutes. (21:00)
Press seven times to display the time after 210 minutes. (21:30)
Press eight times to display the time after 240 minutes. (22:00)
Press nine times to return to time counter (tape remain display)

SECTION 2
ADJUSTMENT PROCEDURES

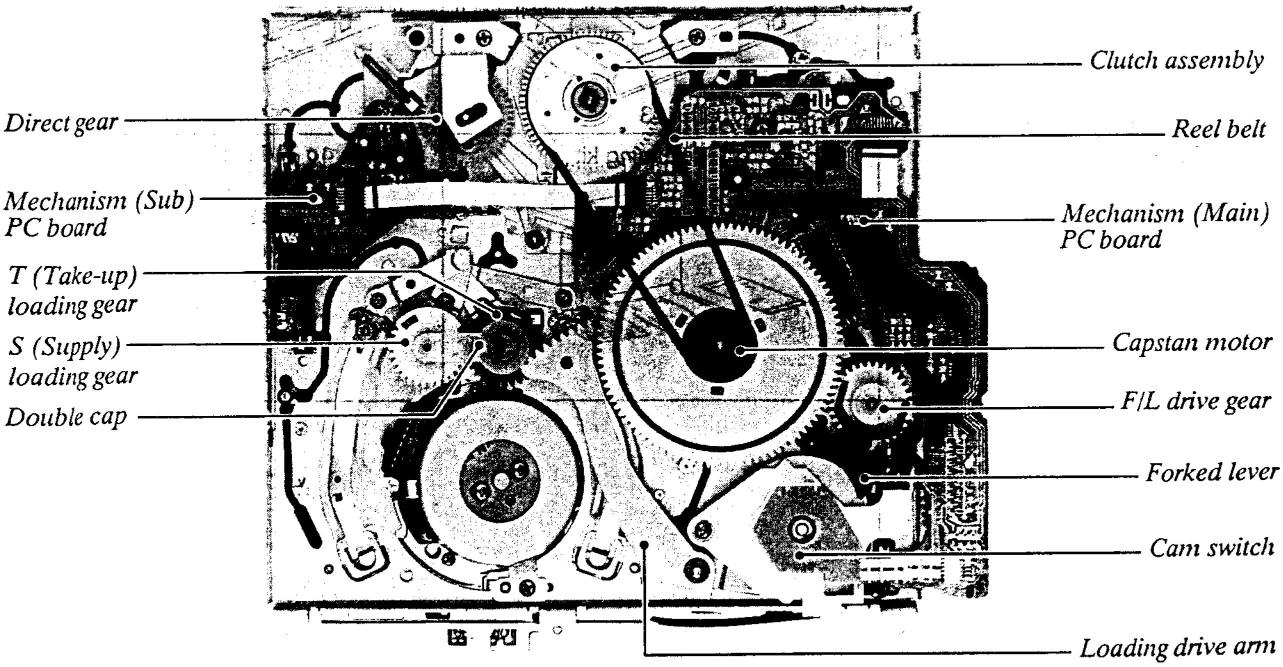
1. MECHANICAL ADJUSTMENT

1-1. Mechanical Parts Location

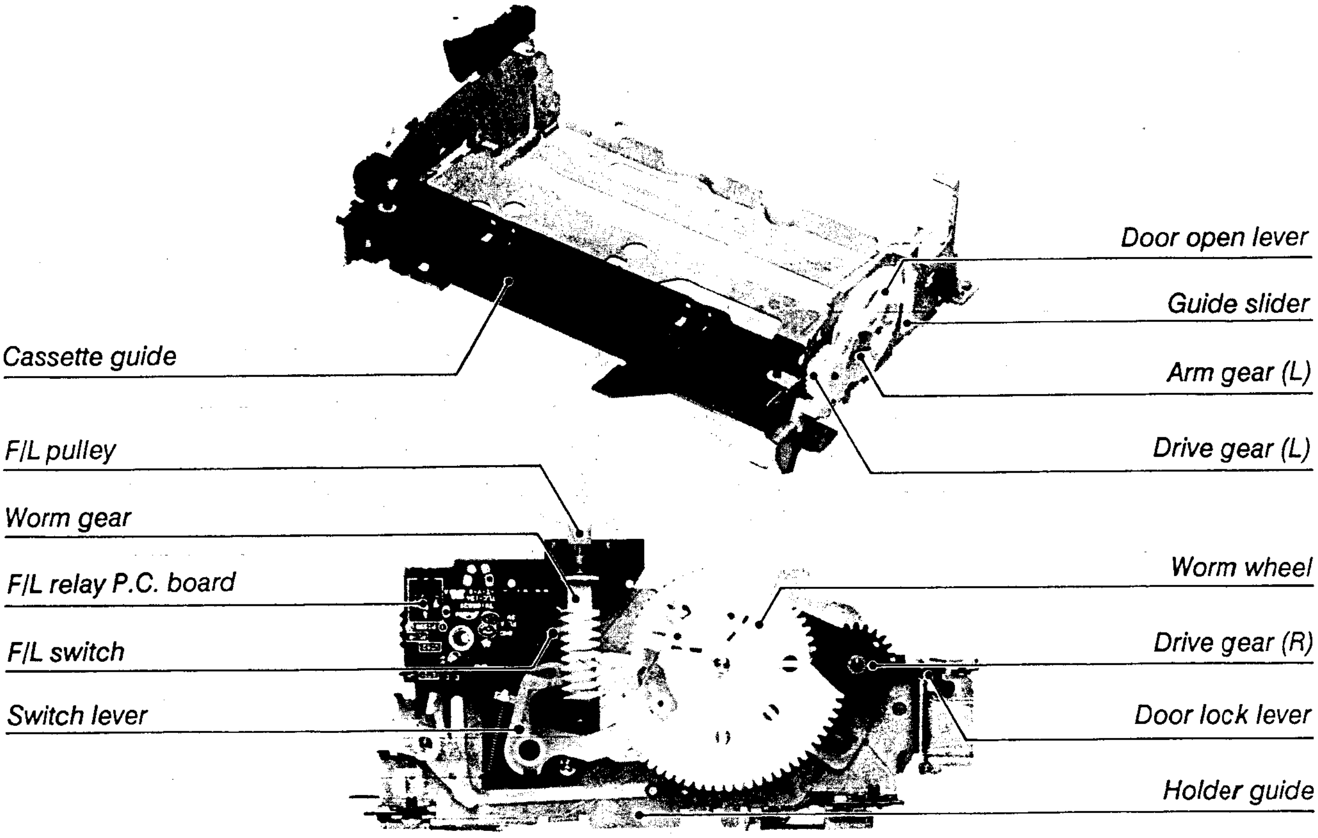
1-1-1. Top View


Upper cylinder
GND brush
FE (Full Width Erase) head
Impedance roller
Tension pole
S (Supply) guide roller
S slant guide post
Lower cylinder
S (Supply) reel table
Lower belt
Lower motor
ACE head
Pinch roller
No.9 guide post
Capstan
No. 8 guide post
T (Take-up) guide roller
T slant guide post
Idle gear
T (Take-up) reel table
Clutch bracket assembly

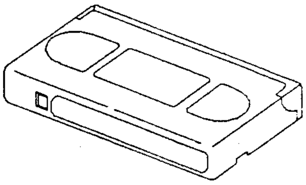
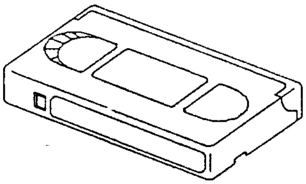
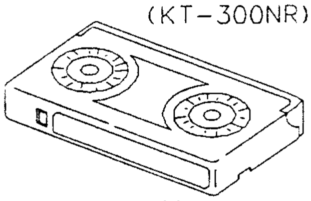
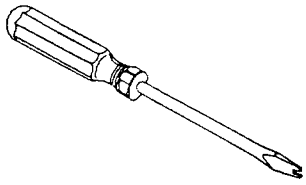
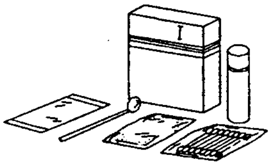
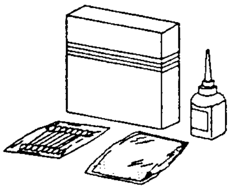
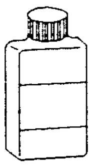
1-1-2. Bottom View


Direct gear
Mechanism (Sub) PC board
T (Take-up) loading gear
S (Supply) loading gear
Double cap
Clutch assembly
Reel belt
Mechanism (Main) PC board
Capstan motor
F/L drive gear
Forked lever
Cam switch
Loading drive arm

1-1-3. Front Loading Mechanism


Door open lever
Guide slider
Cassette guide
Arm gear (L)
F/L pulley
Drive gear (L)
Worm gear
F/L relay P.C. board
Worm wheel
F/L switch
Drive gear (R)
Switch lever
Door lock lever
Holder guide

1-2. Servicing Jig List

Alignment tape  ST-C1 70909227	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199
Taper nut driver  70909228	VTR cleaning kit 	VTR oil kit 
Grease 		

1-3. Main Parts Servicing Time

- Part replacement time differs from serving life time of each part.
- Following table is prepared based on a standard condition (room temperature, room humidity). The replacement time will be varied depending upon operation environment, using methods, operation duty, etc.
- Particularly, life of the upper cylinder depends upon operation conditions.

	Part Name	Servicing Time (Operating Hours)										Note
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape Transport System	Tension pole	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	• When cleaning, use a swab or a piece of gauze soaked in alcohol. • After the cleaning, cleaned parts are dried completely, and then load a video cassette. • When lubricating, always use the specified oil. • When lubricating, apply one or two drops of oil after the cleaning with alcohol.
	S-slant guide post											
	S-guide roller											
	Impedance roller											
	No. 8 guide post											
	Capstan											
	No. 9 guide post											
	Guide roller											
	T-slant guide post											
	Upper cylinder	Δ	O	Δ	O	Δ	O	Δ	O	Δ	O	
	FE head	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	O	
	ACE head	Δ	Δ	Δ	Δ	Δ	O	Δ	Δ	Δ	Δ	
	Pinch roller	Δ	Δ	Δ	Δ	Δ	O	Δ	Δ	Δ	Δ	
Tape Drive System	Capstan motor						O				O	
	Reel belt		Δ		O		Δ		O		Δ	
	Loading motor										O	
	Loading belt		Δ		O		Δ		O		Δ	
	Supply reel table				▲				▲		O	
	Take up reel table				▲				▲		O	
	Idle gear assembly		O		O		O		O		O	
Others	Band brake assembly		O		O		O		O		O	• Check the back tension.

Δ : Cleaning ▲ : Lubrication O : Check and replace if necessary

1-4. Main Parts Replacement

1-4-1. Front Loading Assembly Replacement

(1) Front loading assembly replacement

< Replacement >

1. Remove the top cover, front panel, and the bottom plate.
2. Remove the FL belt from rear bottom of the unit.
3. Disconnect the connector (A) from the F/L-R P.C. board.
4. Remove two screws (A).
5. Move the front loading assembly in direction shown by the arrow and remove it from the mechanism deck.
6. When remounting, use the above steps in reverse order.

Note:

When reinstalling the FL belt, take care the belt is not twisted.

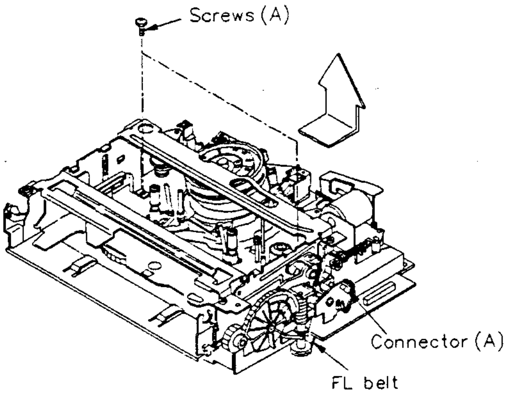


Fig. 4-1-1 Front loading assembly replacement

(2) F/L switch (SI22) and photo-transistor (QI21) replacement

1. Remove the screw (B) and the F/L-R P.C. board.
2. To remove the F/L switch and photo-transistor, unsolder the leads.
3. Replace them with new ones.

Note:

When reinstalling the F/L-R P.C. board, take care the F/L switch is not damaged.

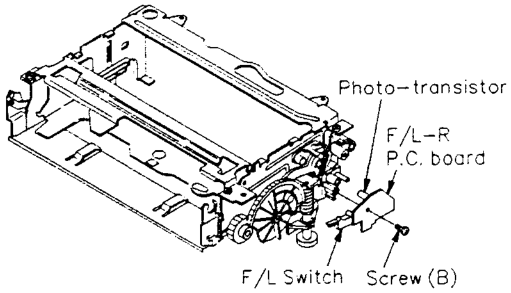


Fig. 4-1-2 F/L switch and photo transistor replacement

(3) Guide slider (K317) replacement

1. Turn the FL pulley gear with your hand until the cassette holder is set to the cassette in condition.
2. Move the holder guide L outward and remove the guide slider from the cassette holder. Then, remove the guide slider from the holder guide L.
3. When remounting, use above steps in reverse order.
4. Turn the FL pulley gear with your hand and set the cassette holder to the cassette out condition.

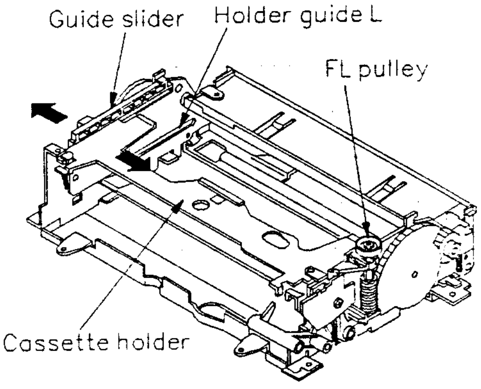


Fig. 4-1-3 Guide slider replacement

(4) Replacement of other parts

1. Do not replace the components not authorized. (Refer to the Parts List.)
   If replaced, accuracy of the front loading assembly will decrease and smooth operation may be not obtained.
2. When replacing the arm gear and the drive gear, take care on the following points:
   - a: Position the arm gear and the drive gear so that their alignment marks match with the arm gear facing almost upward as shown in the illustration, and then mount them. This is true for both the left and right sides.
   - b: If the alignment marks are not matched, the front loading may not operate smoothly.

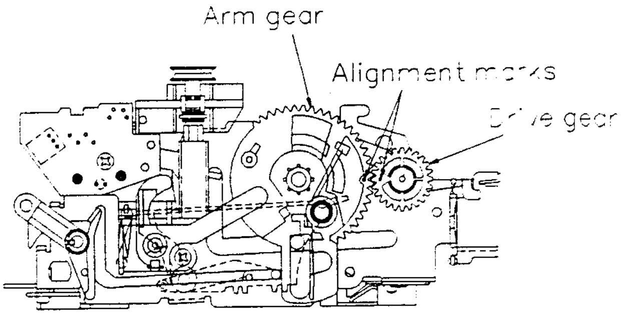


Fig. 4-1-4

1-4-2. Cylinder Replacement

(1) Upper cylinder assembly

< Check >

1. Are video heads damaged or worn out?
2. Are video heads clogged?
   (Replace it if the clogging is not cured by cleaning.)

< Replacement >

1. Remove screw securing ground brush and remove the ground brush.

Note:
Take care not to damage the cylinder when removing the ground brush.

2. Unsolder the relay terminals on the head relay P.C. board. The solder will be removed easily using a desoldering wire. (Fig. 4-2-1, 4-2-2)
3. Remove two screws and remove the upper cylinder assembly.
4. Clean the new upper cylinder assembly and the surface of the flange before mounting, using cleaning kit.
5. Match phase of white arrow and marker (solder plated) on the rotary transformer (A) PC board, and mount the upper cylinder assembly. (Tightening torque 3 – 4kg.cm)
6. Perform the tapetransport adjustment.

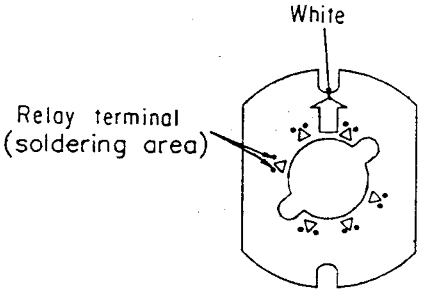

White
Relay terminal
(soldering area)

Fig. 4-2-1 Head relay P.C. board

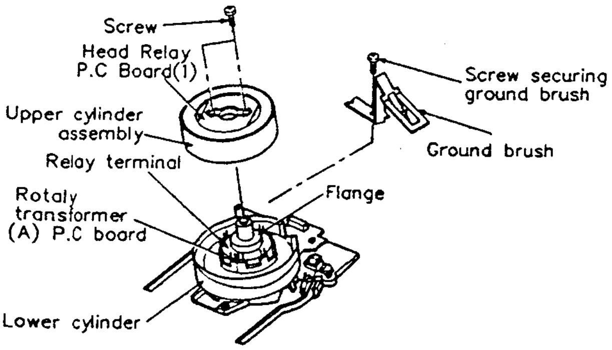

Screw
Head Relay
P.C Board(1)
Upper cylinder
assembly
Relay terminal
Rotaly
transformer
(A) P.C board
Lower cylinder
Flange
Screw securing
ground brush
Ground brush

Fig. 4-2-2 Upper cylinder replacement

(2) Cylinder motor

< Check >

1. Supply the power to the cylinder motor directly.
2. If the motor is not rotated, replace the rotor and stator.

< Rotor replacement >

1. Remove two screws securing rotor and remove the rotor. (Tightening torque 3 – 4kg.cm)

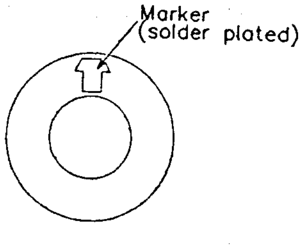

Marker
(solder plated)

Fig. 4-2-3 Rotary trans (A) P.C. board

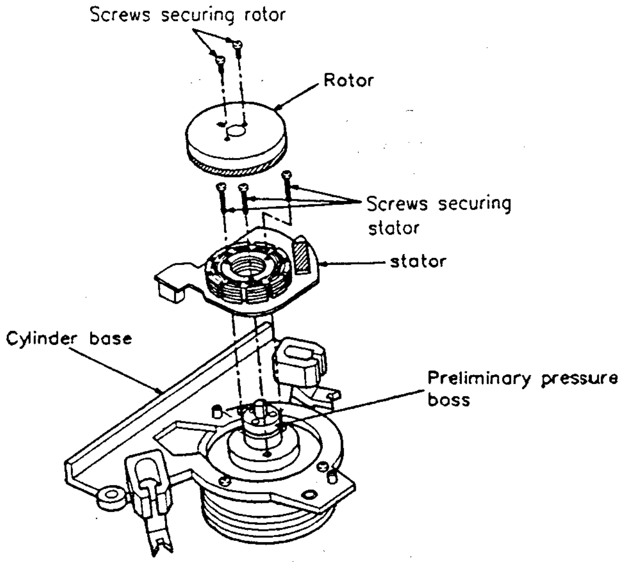

Screws securing rotor
Rotor
Screws securing
stator
stator
Cylinder base
Preliminary pressure
boss

Fig. 4-2-4 Cylinder motor replacement

Note:
When mounting a new rotor, match phase decision holes of the rotor and preliminary pressure boss and then mount the rotor.

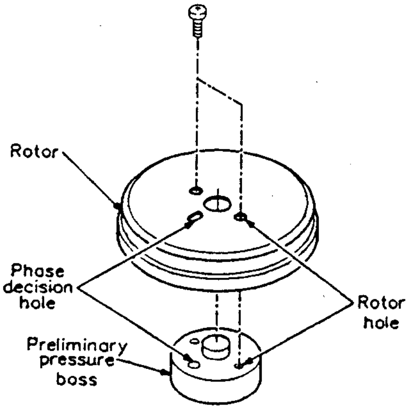

Rotor
Phase
decision
hole
Preliminary
pressure
boss
Rotor
hole

Fig. 4-2-5
Phase decision of rotor preliminary pressure boss

< Stator replacement >

1. Remove the cylinder assembly. Refer to procedures for the cylinder replacement.
2. Remove two screws securing the rotor and remove the rotor. (Fig.4-2-4)
3. Remove three screws securing the stator.
4. Pull out the stator and replace it. (Tightening torque 1.5 – 2.5kg.cm)
5. Assemble the cylinder, using the procedures shown above in reverse order.
6. Adjust according to the tape transport adjustment procedures.

(3) Cylinder assembly

< Check >

1. Are there scratches on running surface of the lower cylinder?
2. Is upper cylinder rotating smoothly?
   If abnormality is found in check above, replace the cylinder.

< Replacement >

1. Remove two screws securing preamplifier and remove the preamplifier.
2. Remove three screws.
3. Disconnect the connector.
4. Remove the cylinder assembly.

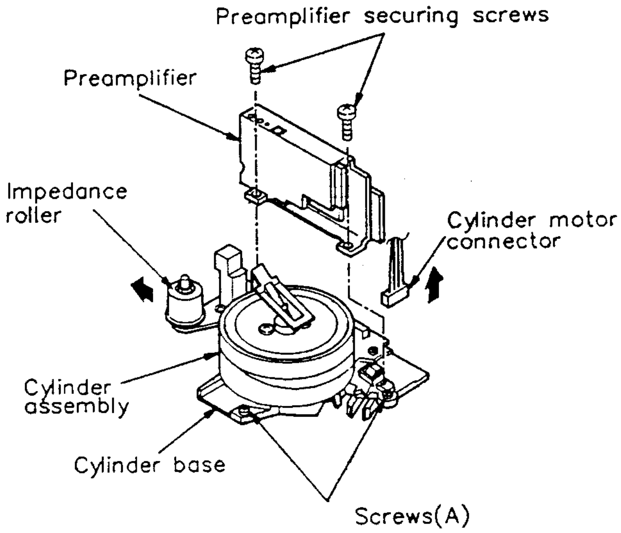

Preamplifier securing screws
Preamplifier
Impedance roller
Cylinder motor connector
Cylinder assembly
Cylinder base
Screws(A)

Fig. 4-2-6 Cylinder assembly replacement

Note:
Remove the cylinder assembly while pushing the impedance roller in direction shown by the arrow.

5. Position the cylinder base in place and mount the cylinder, using the procedures in reverse order. Take care not to damage the cylinder.
6. Adjust according to the tape transport adjustment procedures.

(4) Lower cylinder assembly

< Check >

1. Are there scratches on running surface of the lower cylinder?
2. Is abnormal sound heard during rotation of the cylinder?
3. Is flexible cable damaged?
   If abnormality is found in above checks, replace the lower cylinder assembly.

< Replacement >

1. Remove the cylinder assembly, using procedures for cylinder replacement.
2. Remove the ground brush.
3. Remove the ground cap.
4. Open upper lid of connector on cylinder base PC board, and remove flexible cable.

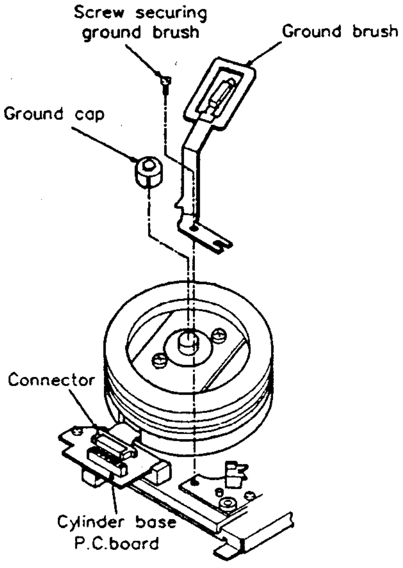

Screw securing ground brush
Ground brush
Ground cap
Connector
Cylinder base P.C.board

Fig.4-2-7

Note:
The upper lid of the connector can be removed by pulling it toward the lower cylinder assembly once and then rising it. (Refer to Fig.4-2-8.)

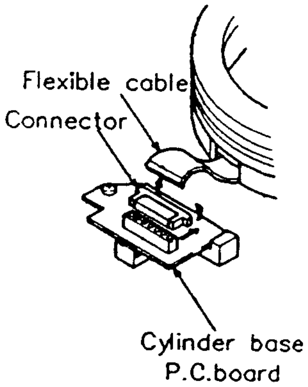

Flexible cable
Connector
Cylinder base P.C.board

Fig. 4-2-8

1-4-3. Transport System Parts Replacement

(1) ACE head assembly replacement

1. Disconnect the connector from the ACE P.C. board.
2. Remove the taper nut.
3. Remove the pinch lock spring and pinch connector so that they do not give trouble when removing the pinch roller from the ACE head.
4. Turn the ACE height adjusting nut counterclockwise and remove the nut in order to remove ACE base assembly. (Fig. 4-3-1)

Note:

Note positions of the ACE base and the taper nut.

4. Remove the E-ring and the ACE azimuth adjusting screw in order to remove the ACE head assembly.
5. Remove the ACE P.C. board from the ACE head assembly.
6. Replace the ACE head assembly, according to the reverse procedures.
7. Mount the taper nut, pinch lock spring and pinch connector.
8. Rotate the ACE height adjusting nut until the ACE base and the upper position of the taper nut have the same position as they were removed.
9. After mounting, perform the tape transport adjustment, starting from the first step.

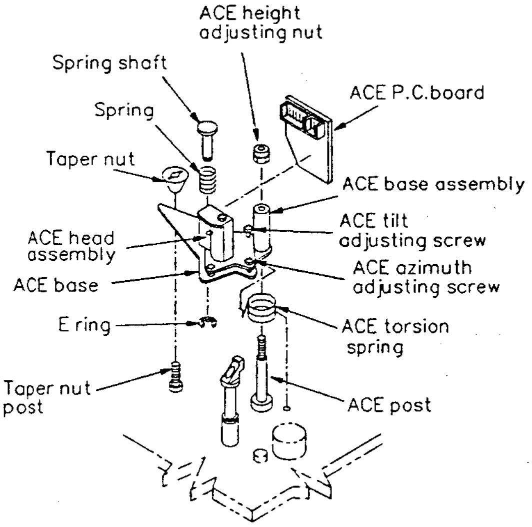

ACE height adjusting nut
Spring shaft
Spring
ACE P.C.board
Taper nut
ACE base assembly
ACE tilt adjusting screw
ACE head assembly
ACE azimuth adjusting screw
ACE base
E ring
ACE torsion spring
Taper nut post
ACE post

Fig. 4-3-1 Replacement of ACE head assembly

Note:

- Since direct mounting of the ACE torsion spring is difficult, first insert the tip of the spring into the hole on the main base and then hook the opposite tip of the spring to the ACE base which has been inserted into the ACE post.
- When replacing the ACE head assembly, always use an ACE head having the same part number. Do not use any other ACE head assembly.

(2) No. 8 guide sleeve replacement

1. Remove No. 8 cap and No. 8 guide sleeve in this sequence as shown in Fig. 4-3-2. When reassembling, perform the previous steps in reverse order.
2. To mount the No. 8 guide sleeve, insert the No. 8 cap onto the No. 8 post and push the cap downward while turning the cap left and right.

Note:

- No. 8 guide sleeve functions as the reference for tape transport, so the replacement should be made carefully.
- When mounting the No. 8 guide cap, mount the cap with its slant surface facing to cassette side.
- The guide sleeve has a directional characteristic, so take care when inserting it. Do not insert the sleeve upside-down. The lower flange thickness is higher than the upper flange thickness by about 1.6mm.

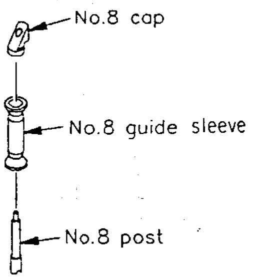

No.8 cap
No.8 guide sleeve
No.8 post

Fig. 4-3-2 No. 8 guide replacement

(3) FE head replacement

1. Disconnect the 2P connector of the FE head.
2. Remove the FE head mounting screw and the FE head can be removed. (Fig. 4-3-3)
3. Replace the new FE head and tighten the FE head mounting screw.
4. Connect the 2P connector.
5. Confirm whether the associated adjustments is not upset, starting check from the linearity adjustment, item 4) of the tape transport adjustment. (Refer to item 1-5-4 (3).)

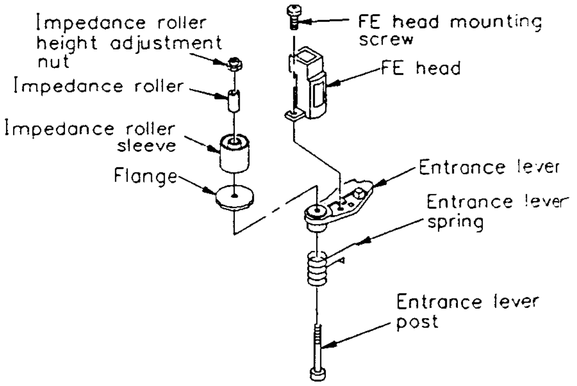

Impedance roller height adjustment nut
FE head mounting screw
FE head
Impedance roller
Impedance roller sleeve
Flange
Entrance lever
Entrance lever spring
Entrance lever post

Fig. 4-3-3 Replacement of No. 3 guide and FE head

(4) Impedance roller replacement

1. Remove the impedance roller height adjusting nut and replace the impedance roller as shown in Fig. 4-3-3. Before removing the nut, note the number of threads or height exceeding the surface of the nut.
2. When mounting a new impedance roller, use the reverse procedures.
3. After replacement of the impedance roller, perform the adjustment from the linearity adjustment, item 4) in the tape transport adjustment. (Refer to item 1-5-4 (3).)

(5) S, T-guide rollers replacement

The same replacement procedures will be applied for both S and T-guide rollers.

1. Loosen the set screw shown in Fig. 4-3-4.
2. Turn the guide roller counterclockwise and remove it.
3. As the O-ring may stick to the guide roller when removed, remove the O-ring and install it on the new guide roller.
4. When remounting, perform the previous steps in reverse order.
5. After completion of the replacement, perform adjustment from the linearity adjustment item 4) in the tape transport adjustment. (Refer to item 1-4-5 (3).)

Note:

When tightening the set screw, temporarily tighten it with light pressure. If it is tightened too hard, associated adjustments can not be made.
The S-guide roller has a no mark on the upper flange and the T-guide roller has a black mark on upper flange. Do not exchange them when remounting.

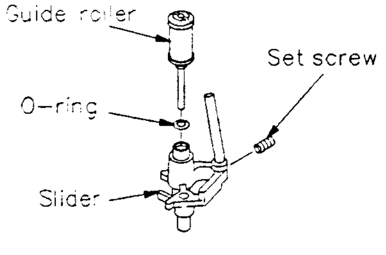


Fig. 4-3-4 Guide roller replacement

(6) S, T-sliders replacement

1. Remove the cylinder assembly.
2. Place the VCR vertically and remove the bottom cover.

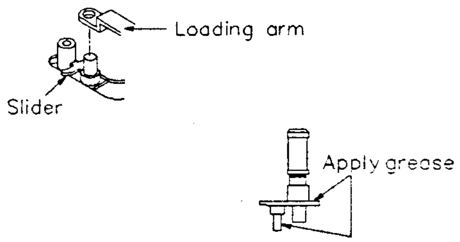


Fig. 4-3-5 S, T-slider replacement

3. Move the slider up to the loading position by turning the loading motor with your hand.
4. Remove the loading arm as shown in Fig. 4-3-5.
5. Remove the guide roller and reinstall it in a new slider according to the steps stated in (5).
6. When replacing the slider, perform the previous steps in reverse order.
7. After completion of the replacement, perform the rough adjustment in the tape transport system adjustment. (Refer to item 1-5-4 (3)).

Note:

When the slider is replaced, always apply grease to the slider receptacle as shown in Fig. 4-3-5.

(7) No. 9 guide lever assembly replacement

1. Remove the front loading assembly.
2. Remove the pinch lever assembly.
3. Remove the cam lever assembly.
4. Remove the loading drive assembly.
5. Remove the ACE head assembly.
6. Remove the nut and replace the No. 9 guide lever. In this case, note the number of threads exceeding the surface of the nut.
7. Reassemble the parts removed, using the reverse procedures.
   (Tighten the nut until the same thread number appears.)
8. After completion of the replacement, perform the adjustment from item 6) in the tape transport adjustment. (Refer to item 1-5-4 (3).)

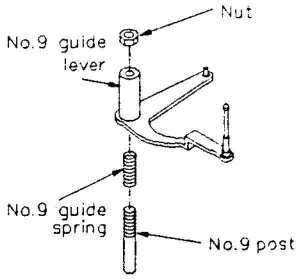


Fig. 4-3-6 No 9 guide lever replacement

1-4-4. Pinch Roller Assembly Replacement

1. Remove the pinch lock spring and disconnect the pinch connector.
2. Remove the stop ring and remove the pinch roller assembly upward.
3. Clean the pinch post and apply grease on it.
4. Replace the pinch roller assembly according to the previous steps in reverse order.
5. After replacement, make sure the T-sub brake is in touch with the T-reel table with a proper pressure.
6. After completion of the replacement, perform adjustment from item "1-5-4 (3) Tape transport system adjustment".

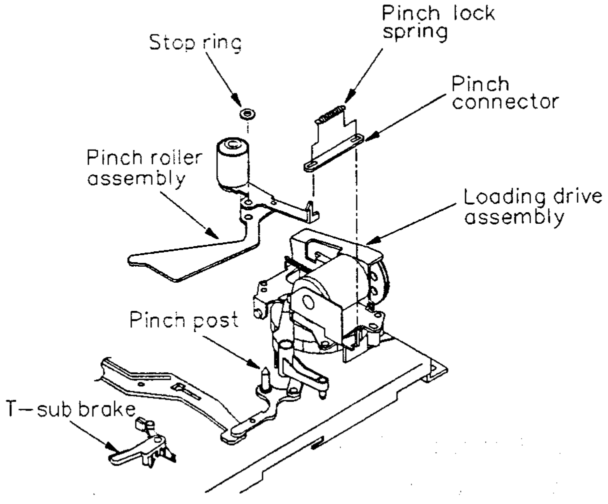

Pinch lock spring
Stop ring
Pinch connector
Pinch roller assembly
Loading drive assembly
Pinch post
T–sub brake

Fig. 4-4-1 Pinch roller replacement

1-4-5. Loading Motor Replacement

1. Remove the motor P.C. board from the loading motor, taking care not to damage the wire harness.
2. Remove the pinch lock spring and disconnect the pinch connector.
3. Off-hook the claw hooked on the main base, using a screw driver and remove the cam lever upward.
4. Remove the screws (A) and remove the loading drive assembly.
5. Remove the loading belt and screws (B), and remove the motor.
6. When replacing the motor with a new one, perform the previous steps in the reverse order, taking care of the polarities (+) polarity should be located on the bottom leftside. In this case, also mount the dew sensor with the motor, using the screws (B). Do not touch the surface of the sensor.

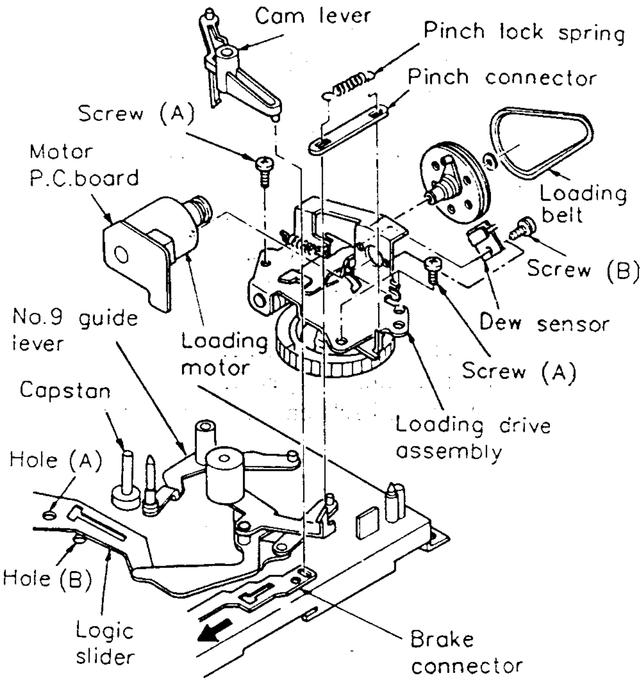

Cam lever
Pinch lock spring
Pinch connector
Screw (A)
Motor P.C.board
Loading belt
Screw (B)
No.9 guide lever
Loading motor
Dew sensor
Screw (A)
Capstan
Loading drive assembly
Hole (A)
Hole (B)
Logic slider
Brake connector

Fig. 4-5-1 Loading motor replacement

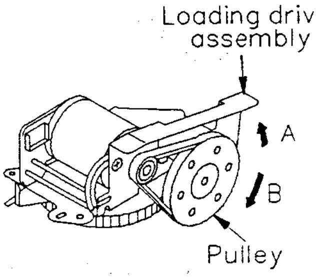

Loading drive assembly
A
B
Pulley

Fig. 4-5-2 Loading drive mounting mode

7. Turn the pulley of the loading drive assembly counterclockwise (as arrow A) until it stops, and then rotate it 3 turns clockwise (as arrow B) to set the mounting mode.
8. Before mounting the loading drive assembly on the main base, position the logic slider so that its hole matches the phase matching hole (A), and then move the No. 9 guide lever until it touches the capstan.
   As the phase matching hole (A) exists near the hole (B) (1.2cm right from hole (A)), do not mistake hole (B) for hole (A).
9. Slide the brake connector in the direction shown by the arrow, and mount the cam lever.
10. Mount the pinch connector and the pinch lock spring.

1-4-6. Tension Regulator Assembly

1. Remove the tape tension spring from the tension regulator assembly.
2. Remove the screw and remove the tension regulator assembly from the main base while releasing the S-soft brake lever.
3. Clean the shaft of the new tension regulator and then apply one or two drops of oil. When replacing the tension regulator, perform the previous steps in reverse order.
4. After completion of the replacement, check position of the tension pole and its adjustment (refer to item 1-5-2) and check the back tension (refer to item 1-5-3).

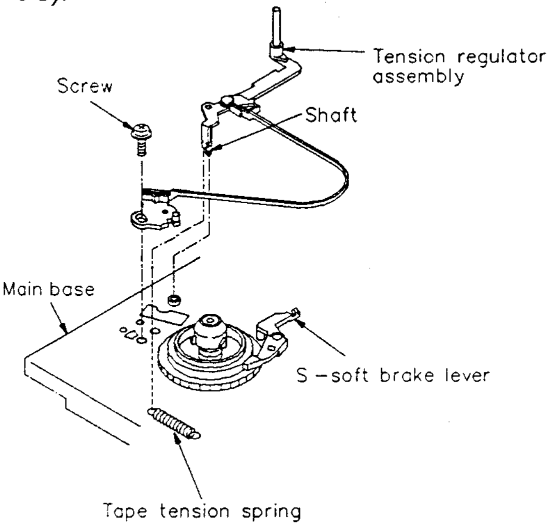

Tension regulator assembly
Screw
Shaft
Main base
S -soft brake lever
Tape tension spring

Fig. 4-6-1 Tension regulator assembly replacement

1-4-7. Cam Switch Replacement

1. Remove the screw and the cam switch assembly.
2. Apply grease to the boss section (lower than the cutout D) of the loading cam.
3. Position the cam switch assembly so that the hole (D) on the cam switch matches the cutout D on the loading cam, and then mount the cam switch with the screw.

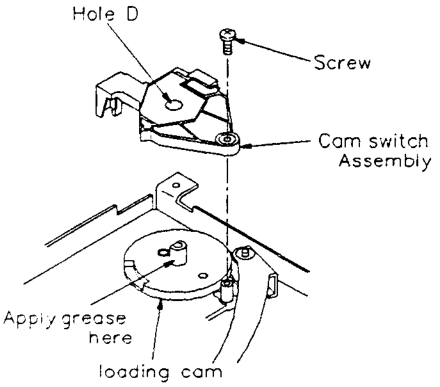

Hole D
Screw
Cam switch Assembly
Apply grease here
loading cam

Fig. 4-7-1 Cam switch assembly replacement

1-4-8. T, S-Sensor Assemblies Replacement

1. Remove the mechanism main or sub P.C. board.
2. Desolder four sensor leads.
3. Unhook the holder claws from the P.C. board.
4. When reinstalling a new sensor, perform the previous steps in the reverse order.

Note:

Since the Hall element is glued on the sensor holder, take care the hall element is not torn off during installation.

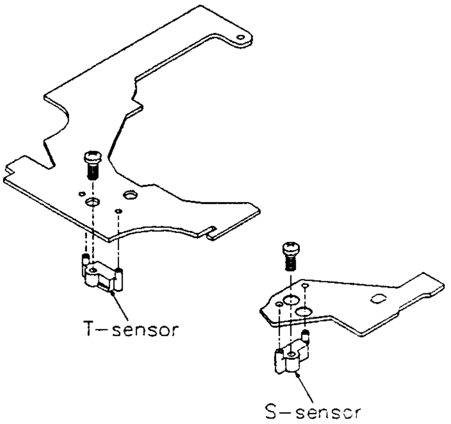

T-sensor
S-sensor

Fig. 4-8-1 Sensor assemblies replacement

1-4-9. Main Brake Assembly Replacement

1. The brake assembly has the mold claws which allow one touch installation or removal.

Note:

When replacing, take care not to touch the brake pad surface.

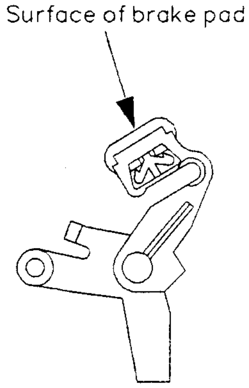

Surface of brake pad

Fig. 4-9-1 Main brake assembly replacement

1-4-10. Ground Brush Replacement

1. Remove the screw and the brush.
2. Clean the ground cap using alcohol.
3. Replace the brush.
   Mount a new brush so that it can contact the center of the ground cap.

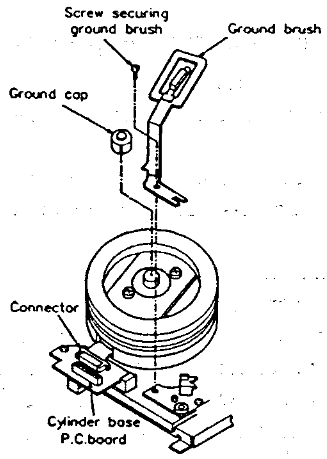

Screw securing ground brush
Ground brush
Ground cap
Connector
Cylinder base P.C.board

Fig. 4-10-1 Brush replacement

1-4-11. Reel Table Replacement

(1) Supply reel table assembly

1. Remove the tape tension spring from the tension regulator assembly. (Also remove the mechanism sub P.C. board.)
2. Remove the screw and remove the tension regulator assembly.
3. Remove the S-reel table assembly upward paying attention not to miss the washer while releasing the S-soft brake lever in the direction shown by the arrow.
4. After cleaning the reel shaft with a cleaning kit, lubricate it with one or two drops of oil.
5. When reinstalling the S-reel table assembly to the deck, make sure the washer is replaced on the reel shaft.

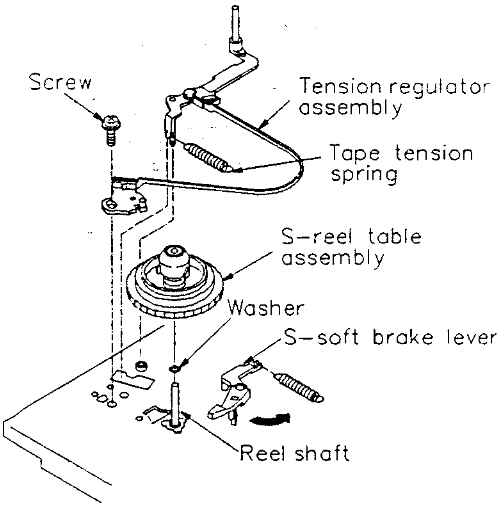

Screw
Tension regulator assembly
Tape tension spring
S-reel table assembly
Washer
S-soft brake lever
Reel shaft

Fig. 4-11-1 Supply reel table assembly replacement

6. Mount the tension regulator assembly.
7. Hook the tape tension spring onto the tension regulator assembly.

Note:
In this case, take care not to give permanent deformation to the spring.

(2) Take-up reel table assembly

1. Remove the pinch lock spring.
2. Remove the pinch connector.
3. Remove the pinch roller assembly.
4. Remove the reverse brake spring from the reverse brake assembly.
5. Remove the reverse brake assembly from the main base. In this case, move the reverse brake in the direction shown by the arrow to remove the brake assembly at a larger hole of the main base.
6. Remove the T-reel assembly.
7. As the bearing is stained with oil, the washer may stick to the T-reel table assembly and be removed with it. Take care not to miss them.
8. Clean the reel shaft using a cleaning kit, and apply one or two drops of oil after the reel shaft has dried.
9. Replace the take-up reel with a new one.

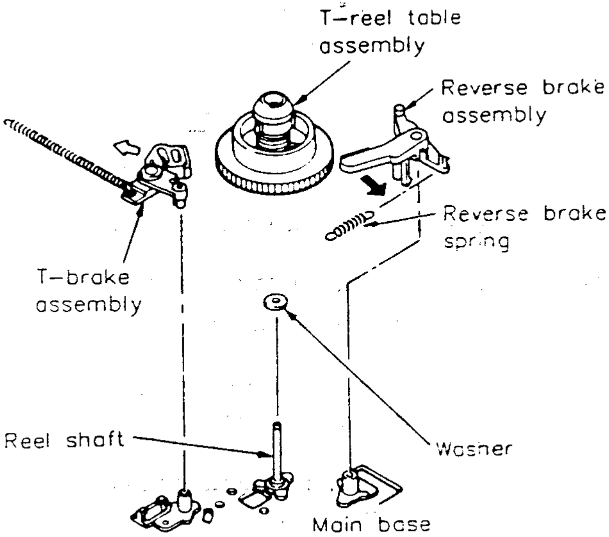

T-reel table assembly
Reverse brake assembly
Reverse brake spring
T-brake assembly
Reel shaft
Washer
Main base

Fig. 4-11-2 Take-up reel table assembly replacement

1-4-12. Direct Gear Assembly Replacement

1. Turn the deck upside-down and remove the reel belt.
2. Remove the flat cable (FFC) and the main relay P.C. board. (Refer to item 1-4-15 (1).)
3. Remove the gear lever spring.
4. Remove the stop ring (1) and remove the gear lever upward.
5. Remove the stop ring (2), and remove the direct gear assembly from the gear lever, taking care not to miss the washers.

6. Clean the gear post, using the cleaning kit. Apply one or two drops of oil.
7. When replacing the direct gear assembly and mounting the gear lever, make sure the washers are replaced on the gear post.
8. Apply grease to the lever post and then mount it in the reverse order.

Note:

- When inserting the stop ring (2), hold the under side of the gear post.
- When installing the gear lever spring, take care of the direction of the hook.
- Take care that the gear lever spring is not positioned over the release lever.
- Take care that the gear lever spring is not positioned over the drive base stopper.

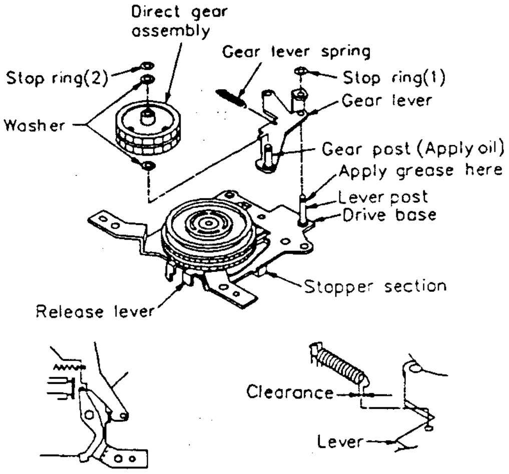

Direct gear assembly
Gear lever spring
Stop ring(2)
Stop ring(1)
Gear lever
Washer
Gear post (Apply oil)
Apply grease here
Lever post
Drive base
Stopper section
Release lever
Clearance
Lever

Fig. 4-12-1 Direct gear assembly replacement

1-4-13. Clutch Assembly Replacement

1. Turn the deck upside-down and remove the reel belt.
2. Remove the stop ring, and remove the clutch assembly upward. Take care not to miss the washers.
3. Clean the clutch post using the cleaning kit, and then apply one or two drops of oil.

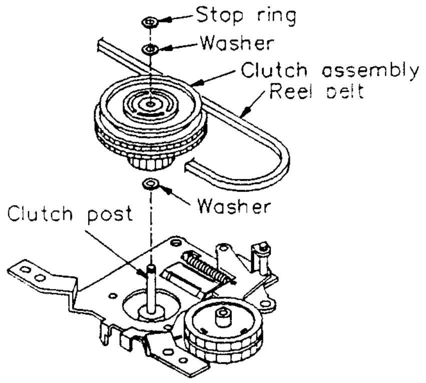

Stop ring
Washer
Clutch assembly
Reel belt
Clutch post
Washer

Fig. 4-13-1 Clutch assembly replacement

4. When replacing the clutch assembly and mounting it on the deck, make sure the washers are replaced on the clutch post.
5. When remounting, use the reverse procedures. (When mounting the belt, take care that the belt is not twisted.)
6. Check the reel torque, using the torque cassette.

1-4-14. Idle Gear Assembly Replacement

1. Turn the deck upside-down.
2. Remove the clutch as stated in item "1-4-13. Clutch Assembly Replacement".
3. Remove the direct gear assembly from the gear lever as stated in item "1-4-12. Direct Gear Assembly Replacement".
4. Place the deck in normal position.
5. Remove two screws.
6. Replace the idle gear assembly with a new one, using the reverse procedures. In this case, assemble the idle gear assembly with the shaft space (between the clutch post and gear post) set as 33.2 $^{+0.1}_{-0.05}$ mm. (When mounting the belt, take care that the belt is not twisted.)
7. Check the reel torque, using the torque cassette.

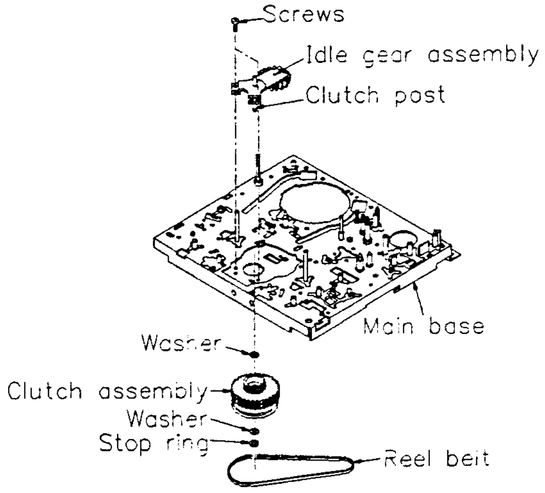

Screws
Idle gear assembly
Clutch post
Main base
Washer
Clutch assembly
Washer
Stop ring
Reel belt

Fig. 4-14-1 Idle gear assembly replacement

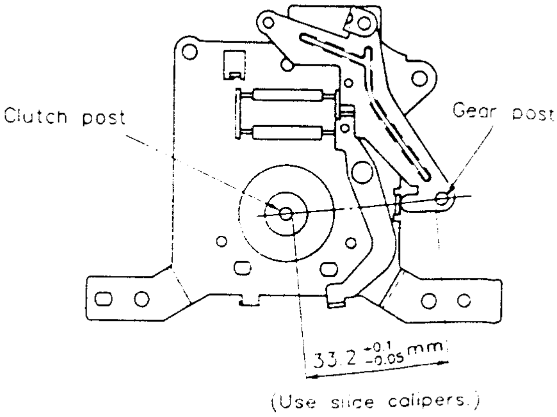

Clutch post
Gear post
33.2 +0.1 −0.05 mm
(Use slide calipers.)

Fig. 4-14-2

1-4-15. Mechanism Relay P.C. Board Replacement

(1) Mechanism main P.C. board replacement

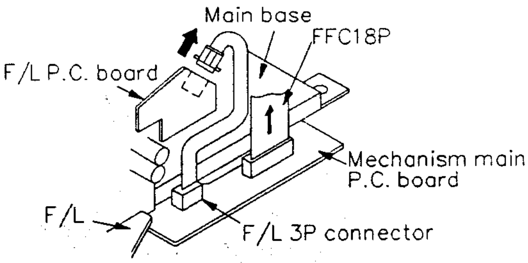

Main base
FFC18P
F/L P.C. board
Mechanism main P.C. board
F/L
F/L 3P connector

Fig. 4-15-1 Main P.C. board replacement

1. Pull and disconnect the FFC18P connector in direction shown by the arrow from the mechanism main P.C. board. Next disconnect FL3P connector from the F/L P.C. board of by pulling it in direction shown by the arrow.
2. Disconnect FFC5P from the mechanism assembly, rear side by pulling it in direction shown by the arrow. Next, remove the F/L belt and the reel belt. (Fig. 4-15-3)

Note:
The F/L belt and the reel belt are different in their length, so paying attention when replacing them.

3. When disconnecting the FFC6P and the FFC10P, refer to the disconnecting method shown in Fig. 4-15-2.

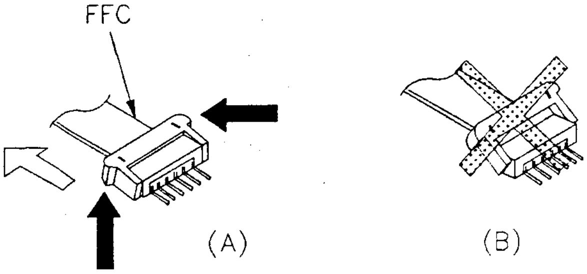


Fig. 4-15-2

< How to disconnect the flat cable from the FFC connector locked >
Hold the protruded parts (shown by the black arrows) of the connector and pull the connector in the direction shown by the white arrow to release the lock. Then, pull the FCC (flat cable) and the cable will be removed. Don't pull the connector as shown in Fig. 4-15-2 (B). If pulled strongly in the direction to be opened, the cable will be damaged.
When connecting, insert the cable with the metal terminal side facing down and then use previous steps in reverse order.

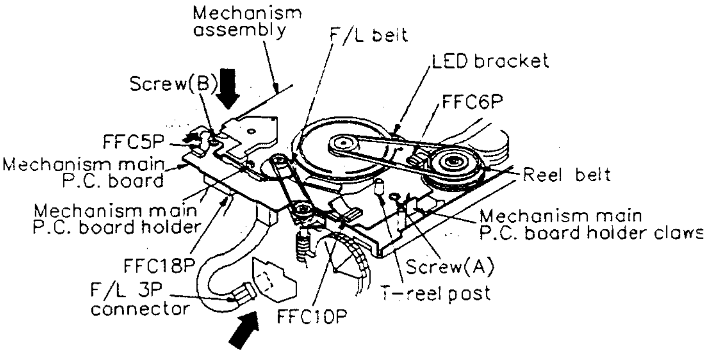

Mechanism assembly
F/L belt
LED bracket
Screw(B)
FFC6P
FFC5P
Mechanism main P.C. board
Reel belt
Mechanism main P.C. board holder
Mechanism main P.C. board holder claws
FFC18P
Screw(A)
F/L 3P connector
T-reel post
FFC10P

Fig. 4-15-3

4. Remove screw (A) and screw (B). (Since the screws are different each other, paying attention when replacing them.)
5. Press and bend claws of the LED bracket in direction shown by the black arrows on upper side of the mechanism assembly, and then push them in direction shown by the white arrow so that they can pass the hole (Fig. 4-15-4).

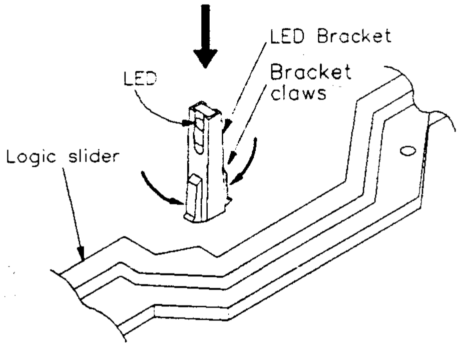

LED Bracket
LED
Bracket claws
Logic slider

Fig. 4-15-4

6. Unhook the mechanism main P.C. board from the mechanism main P.C. board holding claws on the front mechanism assembly and lift the mechanism main P.C. board slightly. (Fig. 4-15-5 and 4-15-6)
7. Turn the mechanism main P.C. board in the direction shown by the shaded arrow as shown in Fig. 4-15-5, and remove the P.C. board from the mechanism main P.C. board holder section. In this case, the P.C. board will close to the F/L worm bracket, so slightly lift the P.C. board so that the P.C. board does not touch the worm bracket. Also take care not to damage the main P.C. board holder. Finally, remove the mechanism main P.C. board, paying attention not to touch the reel post.

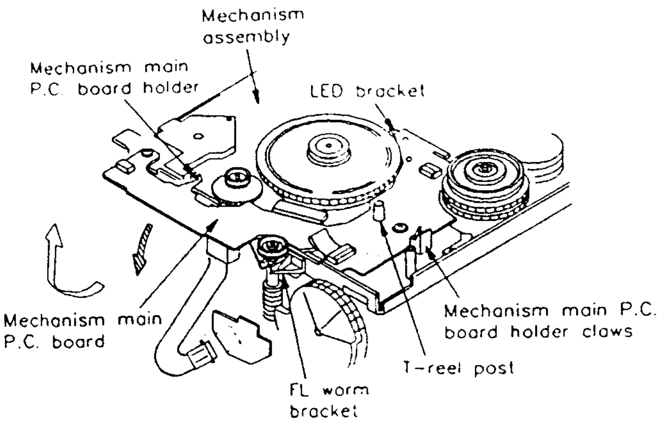

Mechanism assembly
Mechanism main P.C board holder
LED bracket
Mechanism main P.C. board
Mechanism main P.C. board holder claws
T-reel post
FL worm bracket

Fig. 4-15-5

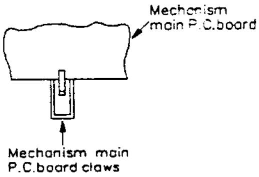

Mechanism main P.C.board
Mechanism main P.C.board claws

Fig. 4-15-6

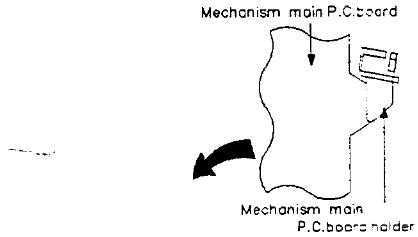

Mechanism main P.C.board
Mechanism main P.C.board holder

Fig. 4-15-7

Note:
When removing or remounting, take care that the LED is not contaminated by grease or damaged by scratches. (Fig. 4-15-4)

8. When mounting, insert the LED section onto the LED bracket hole so that the claws of the LED bracket do not engage the main base completely (Fig. 4-15-8). Next, mount the P.C. board on the T-reel post and the mechanism main P.C. board holder section securely, using the previous steps in reverse order. In this case, take care that FFC5P, FFC6P, and FFC10P are not jammed between the parts.
9. Hereafter, mount the parts in reverse procedures. In this case, route the FFC6P as shown in Fig. 4-15-9.

Note:
Take care the reel belt does not touch the flat cables, etc.
Also take care the reel belt and the F/L belt are not twisted when they are installed.

10. After the replacement, make sure all parts such as connectors, belts, etc. are mounted without missing any parts. Improper connection or installation, etc. may cause erroneous operation.

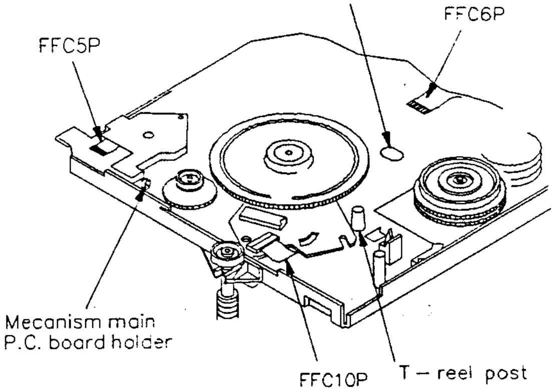

LED braket hole
FFC6P
FFC5P
Mecanism main P.C. board holder
FFC10P
T – reel post

Fig. 4-15-8

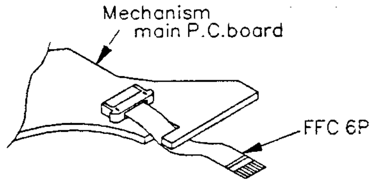

Mechanism main P.C.board
FFC 6P

Fig. 4-15-9

(2) Mechanism sub P.C. board replacement

1. Disconnect the flat cable (which connects the main and the sub P.C. board) from the connector on the sub P.C. board.
2. Remove the screw.
3. Remove the sub P.C. board while opening the claws securing the sub P.C. board. In this case, take care not to damage the lens of the end sensor mounted on rear of the sub P.C. board.
4. When mounting, use the reverse procedures. Mount the sub P.C. board while turning the erase prevention lever in the direction shown by the arrow.

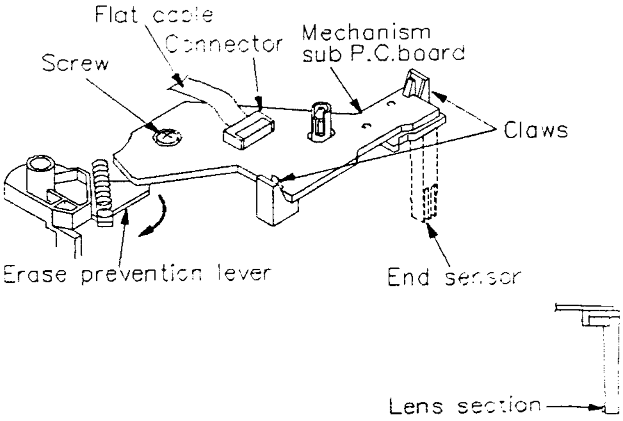

Flat cable
Connector
Screw
Mechanism sub P.C.board
Claws
Erase prevention lever
End sensor
Lens section

Fig. 4-15-10

1-4-16. Capstan Motor Replacement

1. Turn the deck upside-down.
   Remove the F/L belt, reel belt, FFC (3) for cam switch, FFC (4) for mechanism sub P.C. board, and FFC (5) for capstan motor.

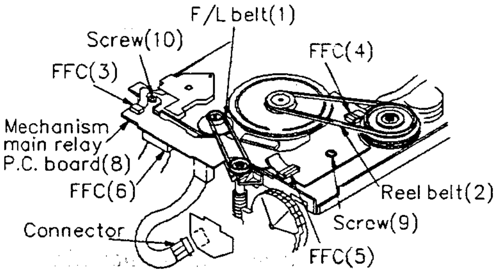

F/L belt(1)
Screw(10)
FFC(4)
FFC(3)
Mechanism main relay P.C. board(8)
FFC(6)
Reel belt(2)
Connector
Screw(9)
FFC(5)

Fig. 4-16-1

2. Replace the deck in normal position.
   Remove the FFC (6) for unit main P.C. board, and then disconnect the connector extending from the mechanism main relay P.C. board to the F/L.
3. Remove screws (9) and (10) from the rear of the deck, and remove the mechanism main relay P.C. board. (For more details, refer to item "1-4-15. Mechanism Relay P.C. Board Replacement". (Screws (9) and (10) are not the same, so do not exchange when using.)
4. Remove the FFC (3) from the capstan motor by sliding the connector holder in the direction shown by the arrow.

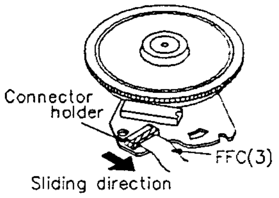

Connector holder
FFC(3)
Sliding direction

Fig. 4-16-2

5. Hold the capstan motor on the rear of the deck. Remove three screws on the front side of the deck and then remove the motor.

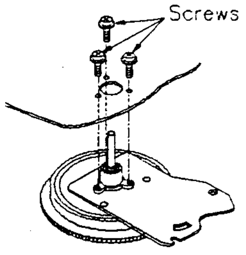


Fig. 4-16-3

6. Replace the capstan motor with a new one having the same part number.
7. First, position the capstan motor so that its direction matches to its receptacle as shown in the Fig. 4-16-4 and then mount the motor from the rear side of the deck, taking care not to damage the shaft, motor, etc. Particularly take care not to damage the F/L drive gear.

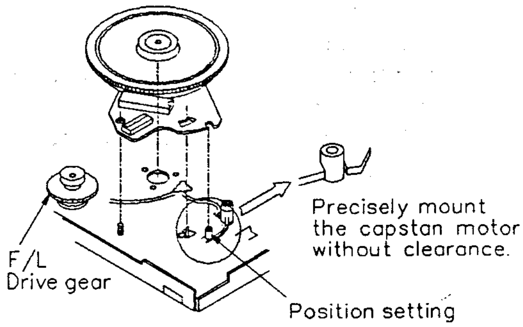

Precisely mount the capstan motor without clearance.
F/L Drive gear
Position setting

Fig. 4-16-4

8. Next, secure the capstan motor with three screws from the upper side of the deck. In this case, do not use the screws once removed. Precisely mount the motor without any clearance.

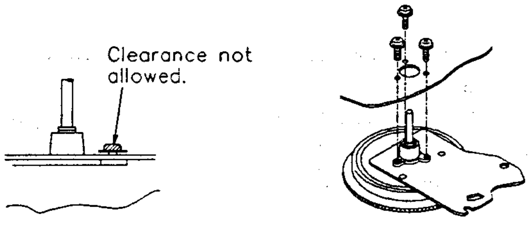

Clearance not allowed.

Fig. 4-16-5

9. Connect the FFC to the motor, taking care of its top and bottom side. It should be inserted with the metal terminal side facing downward. Insert the FFC and securely lock the connector by moving it as shown by the shaded arrow.

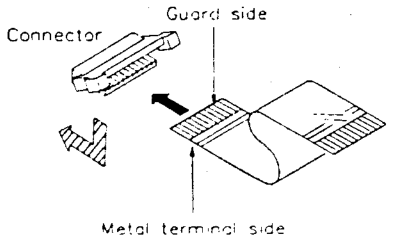

Guard side
Connector
Metal terminal side

Fig. 4-16-6

10. Hereafter, proceed the remounting, using the mounting procedures in the reverse order.
    When remounting, take care that the capstan motor, reel belt, FFC, etc. are not in contact with each other. Also take care that the belt is not twisted.
11. After completion of the capstan motor replacement, check the transport characteristics according to the transport adjustment procedure. (Refer to item 1-5-4 (3).)

1-5. Check and Adjustment

1-5-1. Phase Matching of Loading Gear

1. Turn the pulley of the loading drive assembly in a counterclockwise direction (viewed from the motor shaft) until it stops, to set the loading gear to the mounting position.
   (If the turning of the pulley is difficult, disconnect the connector from the motor P.C. board and apply a voltage of 7V to pins 1 and 2.
2. Move the S, T-sliders and tension lever to the unloading positions.

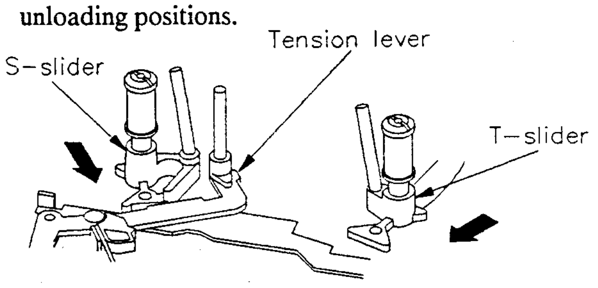

Tension lever
S−slider
T−slider

Fig. 5-1-1 Unloading position

3. Mount the T-loading gear and T-loading link assemblies on the boss provided at the T-slider (capstan side).
4. Align the two delta marks to fit the T-loading gear and S-loading gear, and then mount the S-loading gear and S-loading link assemblies.

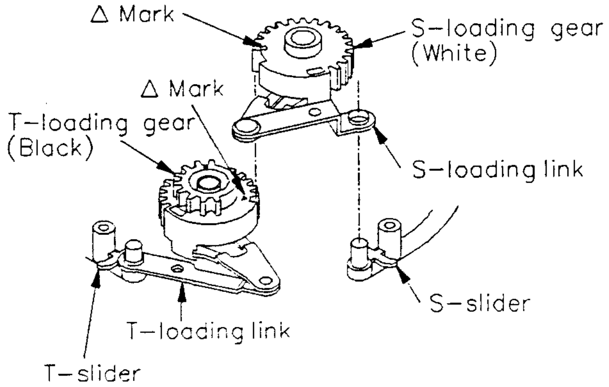

△ Mark
S−loading gear
(White)
△ Mark
T−loading gear
(Black)
S−loading link
S−slider
T−loading link
T−slider

Fig. 5-1-2 Loading gear mounting

5. Align the engraved mark of the loading arm and the circular hole of the T-loading gear, and then mount the loading arm.

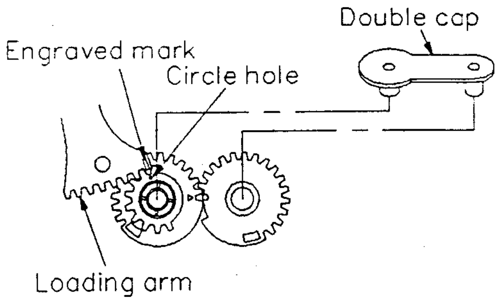

Double cap
Engraved mark
Circle hole
Loading arm

Fig. 5-1-3 Loading gear phase matching

6. Mount the double cap (larger side) to the T-loading gear side.
7. After the mounting of the parts, turn the pulley of the loading drive assembly 2 – 3 turns in the clockwise direction viewed from the motor shaft.

1-5-2. Check and Adjustment of Tension Pole Position

1. Set the deck to play mode with the front loading assembly removed.
2. Make sure the left end of the tension sleeve is 8 0.5mm away from the main base edge as illustrated.
3. If necessary, loosen the screw and adjust the mounting position of the band bracket.

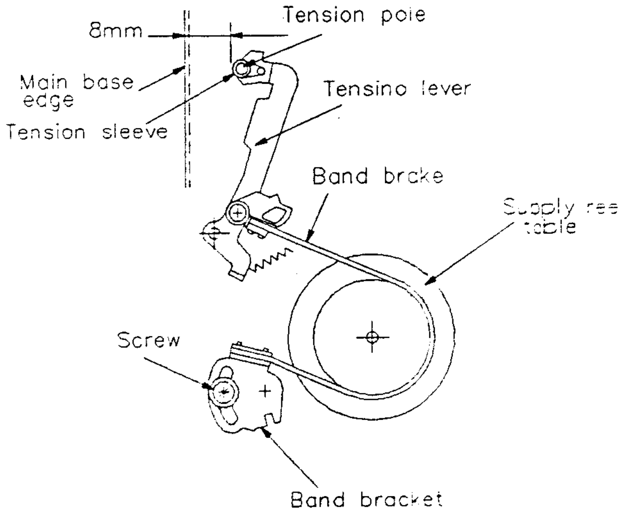

8mm
Tension pole
Main base
edge
Tensino lever
Tension sleeve
Band brcke
Supply ree
table
Screw
Band bracket

Fig. 5-2-1 Tension pole position

1-5-3. Reel Torque

(1) Reel torque

1. REVIEW mode
   Excessive torque will cause damage to the tape during REVIEW mode. On the other hand, poor torque may not wind the tape.
2. Record/Playback (take-up side) mode
   Too little torque does not rewind the tape to the end. If too large the tape may be stretched by excessive tension.
3. Inspection
   Rewind the torque cassette (recorded in SP mode) to the end, then check the torque values shown below.
   Review 160 ± 20g-cm
   Record/Playback 70 – 130g-cm

For checking the method, refer to the following item "(2) Reel torque check".

(2) Reel torque check

1. First, record a TV broadcast program on the entire torque cassette tape (KT-300NR) in the SP mode.
2. Load the torque cassette in the VTR and feed forward the tape before proceeding with measurement.
3. Set the VTR to the REVIEW mode and feed the tape for about 15 sec., and then make sure the take-up torque of 160 ± 20g-cm is obtained while observing the left torque meter.
4. After completion of step 3, set the VTR to the PLAY mode and feed the tape for about 30 sec. Read the right torque meter and check the torque of 70 - 130g-cm is obtained.
5. When the review torque and playback torque are out of limit, replace the clutch assembly.
6. When the clutch assembly and the idle gear are replaced, perform the reel torque check.
7. Confirmation and adjustment of the back tension are performed by using a back tension cassette gauge.
   First, make sure that the tension pole is positioned correctly. (Refer to item 1-5-2).
   Load a back tension cassette and set the VTR to the PLAY mode.
   Make sure the meter is indicating 45 – 75 gf-cm.
   If the value is out of limit, first make sure the tension level spring is normal, and then replace the tension regulator assembly as required. (Refer to item 1-4-6).

PRECAUTIONS FOR USE OF TORQUE CASSETTE (KT-300NR)

1. Before loading a torque cassette in a VTR, always remove tape slack. The tape slack can be removed by rotating the reel to its take-up direction. (The tape tends to slack when there is no reel brake actions.)
2. When the torque cassette is loaded, confirm followings:
   a. Make sure the tape does not ride up or over the No. 8 cap. If it does, do not eject the tape but bring the tape to its correct position, taking care not to damage the tape.
   b. Make sure the tape is not slackened, if slackened, operate the VTR in FF or REW mode and then stop the tape. Then make sure the tape is not slackened again.
   c. After above confirmation, proceed to the reel torque adjustments and confirmation.
3. Cautions for removal of torque cassette
   a. When removing the torque cassette from the VTR, set the VTR to the STOP mode and wait for several seconds. Then, make sure the tape is not slackened. Push the EJECT button to remove the cassette.
   b. When removing the torque cassette from the VTR, also make sure the tape is not slackened inside the cassette lid before pulling the cassette from the VTR. If the tape is slackened inside the lid, carefully bring the tape in place and then pull the cassette.
4. If the previous precautions 1, 2 and 3 are not performed properly, the tape may be damaged and correct measurements can not be performed.
5. Do not use worn out or damaged tape, if used they may damage video heads on the cylinder. In such a case always replace the tape with a new one.
   The replacement tape is of E-180 type, 6.01 ± 0.3m in length.

1-5-4. Tape Transport System

The tape transport system has been precisely adjusted in the factory, so no check and alignment are necessary except the followings:

- Noises observed on the screen
- Tape damage
- Parts, shown in the adjustment procedures for the tape transport system, item 1-4-3, were replaced.

< Adjustment reference >

Lower flange height of No. 8 guide is used as the basic reference for the transport adjustment. To keep height of the No. 8 guide, do not apply excessive force onto the main base to prevent the main base from deformation.

(1) Location of tape transport adjustment

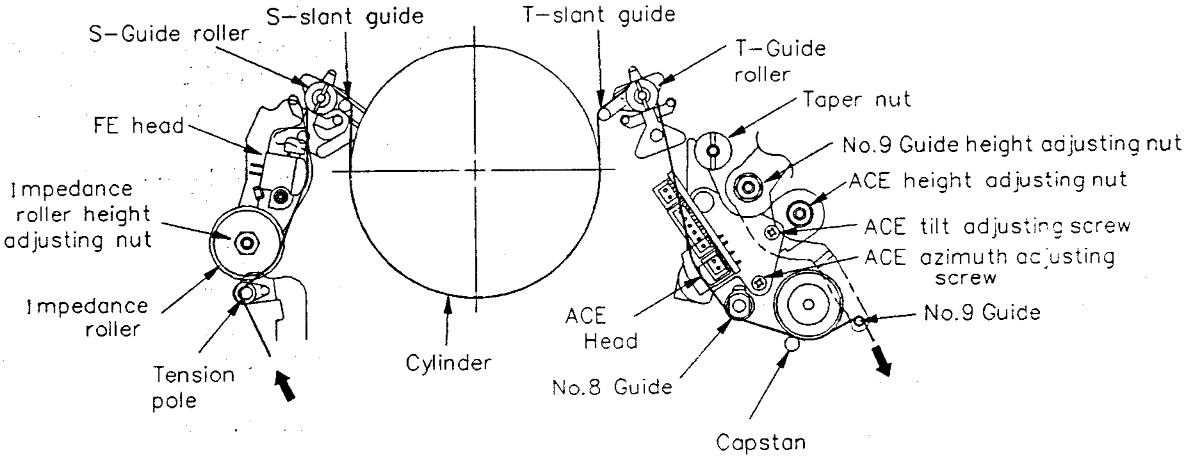

S-Guide roller
S-slant guide
T-slant guide
T-Guide roller
Taper nut
No.9 Guide height adjusting nut
ACE height adjusting nut
ACE tilt adjusting screw
ACE azimuth adjusting screw
No.9 Guide
FE head
Impedance roller height adjusting nut
Impedance roller
Tension pole
Cylinder
ACE Head
No.8 Guide
Capstan

Fig. 5-4-1 Location of tape transport adjustment

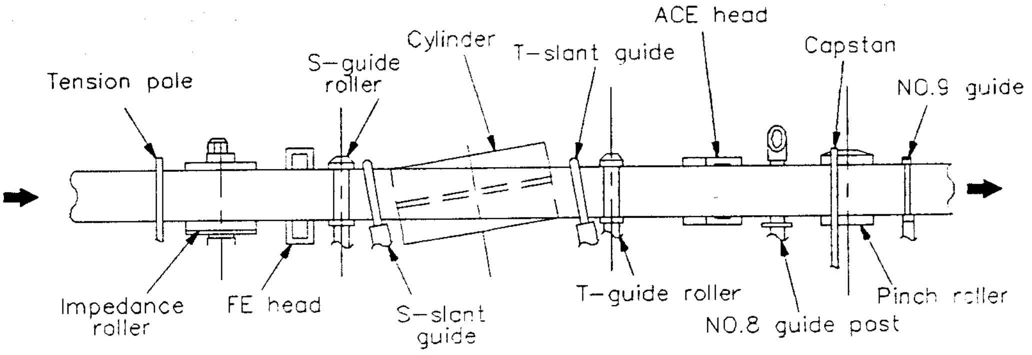
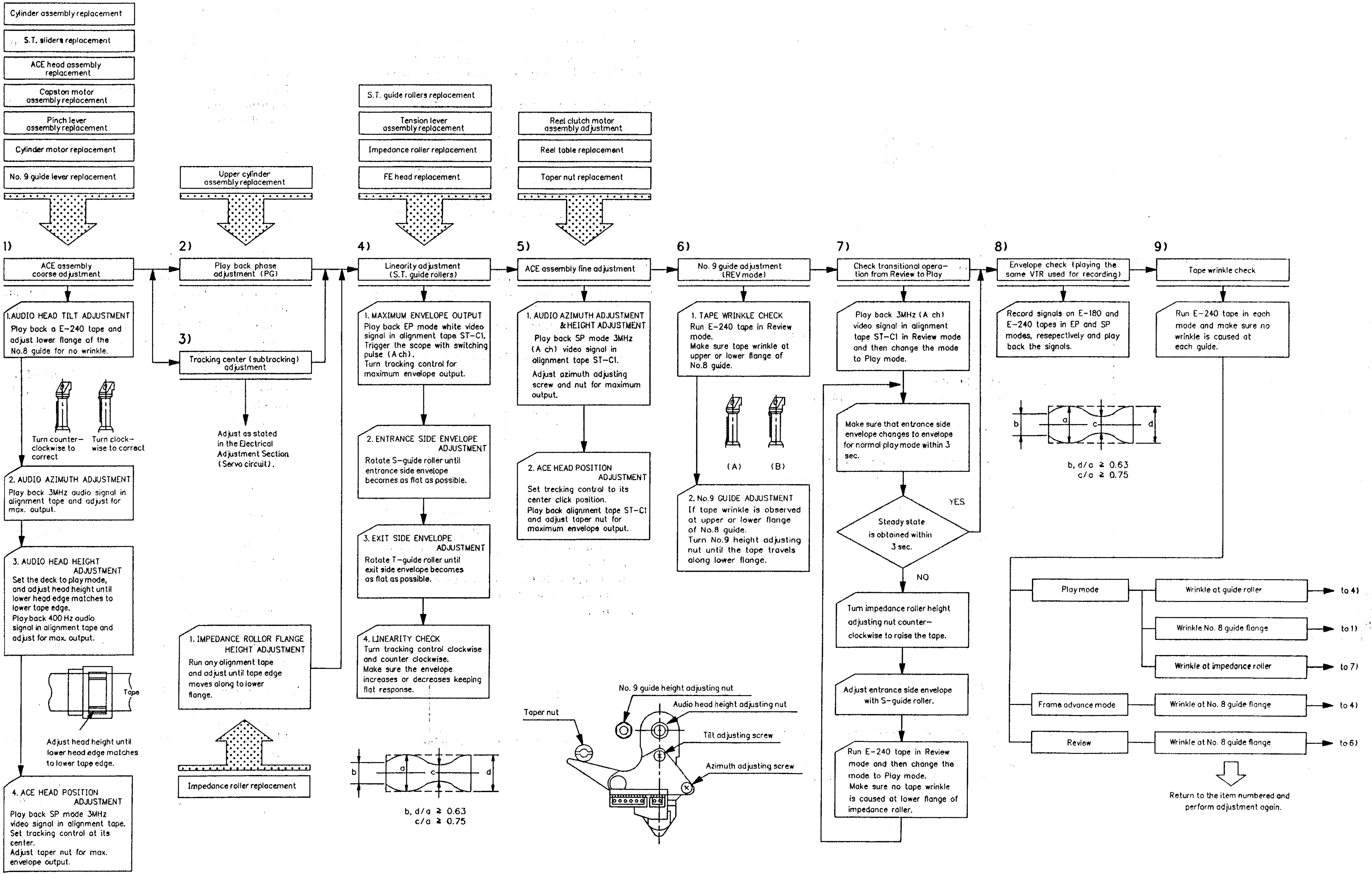

Tension pole
S-guide roller
Cylinder
T-slant guide
ACE head
Capstan
NO.9 guide
Impedance roller
FE head
S-slant guide
T-guide roller
NO.8 guide post
Pinch roller

Fig. 5-4-2 Tape travel diagram

(2) Tape transport system adjustment flow chart


Turn counter-clockwise to correct
Turn clock-wise to correct
Tape
(A)
(B)
b
a
c
d
Taper nut
No. 9 guide height adjusting nut
Audio head height adjusting nut
Tilt adjusting screw
Azimuth adjusting screw
YES
NO

Cylinder assembly replacement

S.T. sliders replacement

ACE head assembly replacement

Capstan motor assembly replacement

Pinch lever assembly replacement

Cylinder motor replacement

No. 9 guide lever replacement

1) ACE assembly coarse adjustment

1. AUDIO HEAD TILT ADJUSTMENT
Play back a E-240 tape and adjust lower flange of the No.8 guide for no wrinkle.

2. AUDIO AZIMUTH ADJUSTMENT
Play back 3MHz audio signal in alignment tape and adjust for max. output.

3. AUDIO HEAD HEIGHT ADJUSTMENT
Set the deck to play mode, and adjust head height until lower head edge matches to lower tape edge.
Play back 400 Hz audio signal in alignment tape and adjust for max. output.

Adjust head height until lower head edge matches to lower tape edge.

4. ACE HEAD POSITION ADJUSTMENT
Play back SP mode 3MHz video signal in alignment tape.
Set tracking control at its center.
Adjust taper nut for max. envelope output.

Upper cylinder assembly replacement

2) Play back phase adjustment (PG)

3) Tracking center (subtracking) adjustment

Adjust as stated in the Electrical Adjustment Section (Servo circuit).

Impedance roller replacement

1. IMPEDANCE ROLLOR FLANGE HEIGHT ADJUSTMENT
Run any alignment tape and adjust until tape edge moves along to lower flange.

S.T. guide rollers replacement

Tension lever assembly replacement

Impedance roller replacement

FE head replacement

4) Linearity adjustment (S.T. guide rollers)

1. MAXIMUM ENVELOPE OUTPUT
Play back EP mode white video signal in alignment tape ST-C1.
Trigger the scope with switching pulse (A ch).
Turn tracking control for maximum envelope output.

2. ENTRANCE SIDE ENVELOPE ADJUSTMENT
Rotate S-guide roller until entrance side envelope becomes as flat as possible.

3. EXIT SIDE ENVELOPE ADJUSTMENT
Rotate T-guide roller until exit side envelope becomes as flat as possible.

4. LINEARITY CHECK
Turn tracking control clockwise and counter clockwise.
Make sure the envelope increases or decreases keeping flat response.

b, d/a ≥ 0.63
c/a ≥ 0.75

Reel clutch motor assembly adjustment

Reel table replacement

Taper nut replacement

5) ACE assembly fine adjustment

1. AUDIO AZIMUTH ADJUSTMENT & HEIGHT ADJUSTMENT
Play back SP mode 3MHz (A ch) video signal in alignment tape ST-C1.
Adjust azimuth adjusting screw and nut for maximum output.

2. ACE HEAD POSITION ADJUSTMENT
Set trecking control to its center click position.
Play back alignment tape ST-C1 and adjust taper nut for maximum envelope output.

6) No. 9 guide adjustment (REV mode)

1. TAPE WRINKLE CHECK
Run E-240 tape in Review mode.
Make sure tape wrinkle at upper or lower flange of No.8 guide.

2. No.9 GUIDE ADJUSTMENT
If tape wrinkle is observed at upper or lower flange of No.8 guide.
Turn No.9 height adjusting nut until the tape travels along lower flange.

7) Check transitional operation from Review to Play

Play back 3MHz (A ch) video signal in alignment tape ST-C1 in Review mode and then change the mode to Play mode.

Make sure that entrance side envelope changes to envelope for normal play mode within 3 sec.

Steady state is obtained within 3 sec.

Turn impedance roller height adjusting nut counter-clockwise to raise the tape.

Adjust entrance side envelope with S-guide roller.

Run E-240 tape in Review mode and then change the mode to Play mode.
Make sure no tape wrinkle is caused at lower flange of impedance roller.

8) Envelope check (playing the same VTR used for recording)

Record signals on E-180 and E-240 tapes in EP and SP modes, resepectively and play back the signals.

b, d/a ≥ 0.63
c/a ≥ 0.75

9) Tape wrinkle check

Run E-240 tape in each mode and make sure no wrinkle is caused at each guide.

Play mode	Wrinkle at guide roller	to 4)
	Wrinkle No. 8 guide flange	to 1)
	Wrinkle at impedance roller	to 7)
Frame advance mode	Wrinkle at No. 8 guide flange	to 4)
Review	Wrinkle at No. 8 guide flange	to 6)

Return to the item numbered and perform adjustment again.

(3) Tape transport system adjustment

- **Pre-adjustment**

When the part(s) listed in Table 5-4-1 is replaced, perform required adjustments by referring to procedures for the tape transport system.

When the part(s) listed in Table 5-4-1 is replaced, the tape path may be changed and may damage alignment tape. To prevent this, first run a E-240 tape and make sure excessive tape wrinkle does not occur at each tape guide.

1. If tape wrinkle is observed at the lower flange of the impedance roller, decreases the lower flange height.
2. If tape wrinkle is observed at the S, T-guide rollers, turn the S, T-guide rollers until wrinkle disappears.
3. If the tape wrinkle is observed at the No. 8 guide, perform the tilt adjustment of the ACE head.

Table 5-4-1

Parts replacement	Adjustment procedure
● Cylinder complete assembly ● S, T-sliders ● ACE head assembly ● Capstan motor assembly ● Pinch lever assembly ● Cylinder motor ● No. 9 guide lever assembly	From item 1)
● Upper cylinder	From item 2)
● S, T-guide rollers ● Tension lever assembly ● Impedance roller ● FE head ● No. 8 guide sleeve	From item 4)
● Reel clutch assembly ● Reel table (S, T) ● Taper nut	From item 5)

- **Adjustment procedures**

1) ACE head assembly coarse adjustment

a. ACE tilt adjustment

1. Play back a E-240 tape and observe running condition of the tape at the lower flange of No. 8 guide.

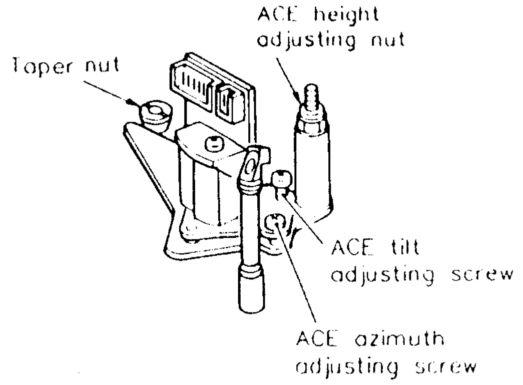


Fig. 5-4-3 ACE head assembly

2. Adjust the ACE tilt adjusting screw until tape wrinkle is caused at the lower flange of No. 8 guide as shown in Fig. 5-4-4(A).
3. Turn the ACE tilt adjusting screw counterclockwise until the tape travels along the lower flange as shown in Fig. 5-4-4(B).

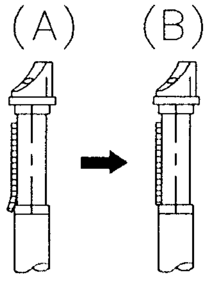


Fig. 5-4-4 No. 8 guide check

b. Audio azimuth adjustment

1. Play back the 3 kHz audio signal on the alignment tape ST-C1.
2. Connect a millivoltmeter to the audio line output terminal.
3. Turn the ACE azimuth adjusting screw to obtain maximum audio output.

c. Audio head height adjustment

1. Run the alignment tape (ST-C1) in the playback mode.
2. Observe surface of the audio head using a dental mirror.
3. Turn the ACE height adjusting nut so that lower tape edge matches to the lower edge of the control head.
4. Play back the 400 Hz audio signal in the alignment tape (ST-C1) and adjust the head height for maximum audio output.

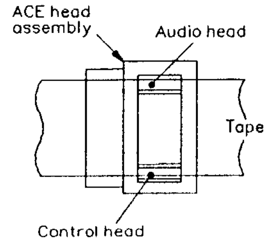


Fig. 5-4-5 Head height

d. ACE head position pre-adjustment

1. Play back the 3 MHz video signal in the alignment tape (ST-C1).
2. Adjust the taper nut for maximum video signal output after the tracking control is set at its center position.

2) Playback phase adjustment

Perform the adjustment according to the methods stated in the electrical adjustment "Servo Circuit".

3) Tracking center (Subtracking) adjustment

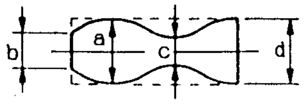
Perform the adjustment according to the methods stated in the electrical adjustment "Servo Circuit".

4) Linearity adjustment (S, T-guide rollers adjustment)

1. Play back the 3 MHz (A ch) video signal on the alignment tape. (ST-C1)
2. Observe the video RF signal envelope on an oscilloscope triggered by the video switching pulse.
3. Make sure the video envelope waveform (in its maximum output) meets the specification shown in Fig. 5-4-6.

Note:

a = maximum output of the video RF envelope
b = minimum output of the video RF envelope at the entrance side
c = minimum output of the video RF envelope at the center point
d = minimum output of the video RF envelope at the exit side



b, d/a ≧ 0.63
c/a ≧ 0.75

Fig. 5-4-6 Envelope waveform adjustment

4. If the A section in Fig. 5-4-7 does not meet the specification, adjust the S-guide roller in up or down direction.
5. If the B section in Fig. 5-4-7 does not meet the specification, adjust T-guide roller in up or down direction.

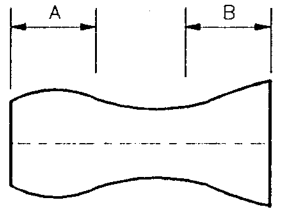


Fig. 5-4-7 Adjustment points

6. After completion of the adjustment(s), turn the tracking control and make sure video envelope variations are almost flat.
   Next, play back the 3 MHz signal on the alignment tape (ST-C1) and make sure the video RF envelope variations are also flat when the tracking control is turned.
7. If the envelope varies as shown in Fig. 5-4-8, adjustment of the S, T-guide rollers may be upset, if so perform the adjustment again.

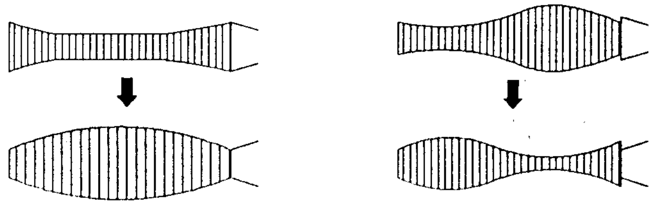


Fig. 5-4-8 Abnormal variation of the waveform

5) ACE head assembly fine adjustment

a. Tape wrinkle check at the lower flange of No. 8 guide

1. If tape wrinkle is observed at the lower flange of No. 8 guide, adjust the ACE tilt adjusting screw counterclockwise as shown in Fig. 5-4-3 until the wrinkle disappears.
2. If a gap is observed between the lower flange of No. 8 guide and the lower edge of tape, adjust the ACE tilt adjusting screw clockwise until the tape travels along the lower flange.

Note:

This adjustment should be made using a beginning part of E-240 tape.

b. Azimuth adjustment

1. Play back the 3 kHz audio signal on the alignment tape (ST-C1).
2. Adjust the ACE azimuth adjusting screw for maximum audio output as shown in Fig. 5-4-3.

c. Head height adjustment

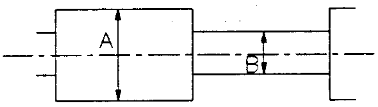
1. Play back the alignment tape.
2. Adjust the ACE height adjusting nut for maximum audio output.

d. ACE head position adjustment

1. Play back the 3 MHz (A ch) video signal on the alignment tape. (ST-C1)
2. Place the tracking control at its center click position.
3. Trigger the oscilloscope with the video switching pulse and observe the video RF envelope waveform.
4. Turn the taper nut slowly and fix the taper nut at the position where the video envelope reaches a peak level.

8) **Envelope check**

1. Make recordings and play back on E-180 and E-240 tapes, and make sure the playback output envelope meets the specification shown in Fig. 5-4-6.
2. In playback using the same video deck as used for the recording, (with a E-180) the video envelope should meet the specification shown in Fig. 5-4-11.



•B/A ≤ 0.55

Fig. 5-4-11 Envelope output and output level difference

3. If the performance does not meet both specifications 1 and 2 above, replace the upper cylinder assembly.
4. Confirm operation of the synchronous editing, using a beginning portion a E-180 tape.
5. If picture noises are observed at the starting position of the editing, adjust the height of the lower flange of the impedance roller again.

9) **Tape wrinkle check**

1. Play back the E-240 tape in the playback, Cue, Review and the frame feeding mode, and observe tape wrinkle at each guide.
2. If excessive tape wrinkle is observed at the mode shown below, perform the associated adjustments also shown below.
   a. Playback mode
      Tape wrinkle at the S, T-guide roller section
         Item 4: Linearity adjustment
      Tape wrinkle at No. 8 guide flange
         Item 1: ACE head assembly coarse adjustment
      Tape wrinkle at impedance roller flange
         Item 7: Check for transitional operations from Review to Play
   b. Review mode
      Tape wrinkle at No. 8 guide
         Item 6: No. 9 guide lever adjustment
   c. Frame feeding mode
      Tape wrinkle at No. 8 guide
         Item 4: Linearity adjustment

Note:

- If video RF signal is not observed with the tracking control set to the center position, perform the ACE head adjustment to obtain maximum video RF envelope in each mode, again.

5. Play back the audio signal on the alignment tape (ST-C1) and make sure the audio output is maximum.

6) No. 9 guide lever adjustment

1. Set the VTR to Cue mode with E-240 tape (at beginning portion) loaded. Switch the Cue mode to the Review mode when the tape has been rewound into the T-reel table to some extent.
2. Check tape wrinkle at the upper and lower flange of No. 8 guide.
   Adjust the No. 9 height adjusting nut so that the tape runs along the lower flange.
3. Set the VTR to the Cue mode again and make sure the tape is not twisted between the capstan and the No. 9 guide. If twisted, adjust the No. 9 guide height and the adjustment in step 1 again.

Note:

When making the adjustment, do not mistake the ACE head height adjusting nut for the No. 9 adjusting nut.

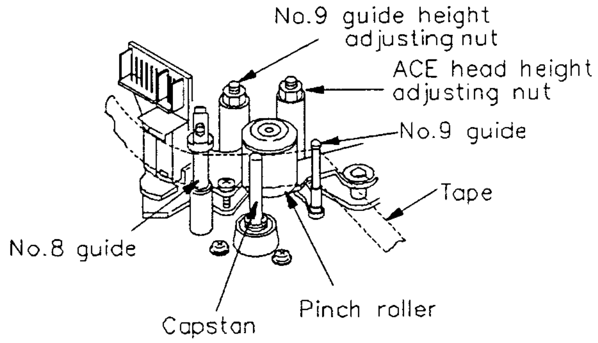

No.9 guide height adjusting nut
ACE head height adjusting nut
No.9 guide
Tape
No.8 guide
Pinch roller
Capstan

Fig. 5-4-9 No. 9 guide lever adjustment

7) Check for transitional operation from Review to Play

1. Play back the 3 MHz (A ch) white video signal on the alignment tape (ST-C1) in Review mode and observe the video RF envelope with the oscilloscope.
2. Switch the Review mode to the Play mode.
   When switched to the Play mode, make sure the entrance side envelope comes to an approximate steady state within 3 seconds as shown in Fig. 5-4-10.

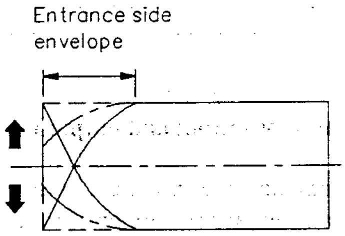


Fig. 5-4-10 Video envelope rising when operation mode is switch from review to play mode

If it does not rise within 3 seconds, adjust as follows:

3. Turn the impedance roller nut counterclockwise to adjust the lower flange height.
   Make sure the tape travels along the lower flange.
4. Since entrance side linearity varies as the height of the lower flange of the impedance roller is varied, adjust the S-guide roller to correct the linearity.
5. Change operation mode from the Review to the Play mode again and make sure the entrance side envelope rises within 3 seconds. If not, perform the adjustment again from item 3.
6. Play back the E-180 tape in the Play mode and make sure no tape wrinkle occurs at the lower flange of the impedance roller.
   If excessive tape wrinkle occurs, turn the impedance roller nut clockwise until the wrinkle disappears and then perform adjustment from item 4.

Note:

If the rising characteristic is poor in Review mode, screen noises may occur in synchronous editing recording.
Perform the adjustment carefully.

< Specified input and output levels, and impedance >

Video input:	Negative sync, standard composite video signal 1 Vp-p, 75 ohm
Video output:	Same as the video input 1Vp-p, 75 ohm
Audio input:	-5 dBs, more than 10k ohm
Audio output:	-5 dBs, less than 1k ohm

Alignment sequence

Proceed the alignments in the sequence as shown in Fig. 2-1-2.

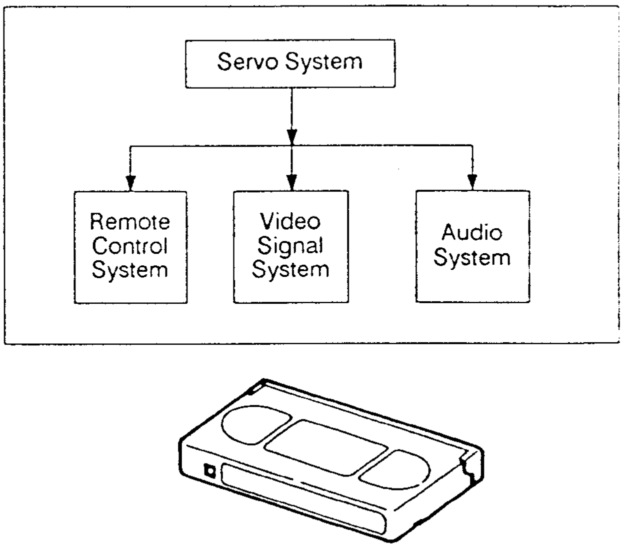


Fig. 2-1-2

Alignment tape specifications

[1] ST-C1

Segment	System	Playback Time (min.)	Video Signal	Video Signal	Applications
1	PAL & SECAM	10	Mono Scope	1 kHz	Servo checks and adjustment
2	PAL & SECAM	10	3 MHz Ach	400Hz	Tape path checks and adjustment
3	PAL	5	Color bar	3 kHz	Video and Sound checks and adjustment
4	SECAM	5	Color bar	3 kHz	Video and Sound checks and adjustment
5	MESECAM	5	Color bar	3 kHz	Video and Sound checks
6	NTSC	5	Color bar	1 kHz	Video and Sound checks

2. ELECTRICAL ADJUSTMENT

< Test equipment required >

Adjustment will be performed with the following test equipment.

1. Color TV (Monitor)
2. Oscilloscope, 2 CHs, 15 MHz or higher with delay system
3. Frequency counter (7 digits or higher)
4. Millivoltmeter
5. Digital voltmeter
6. Tester (20 K ohm/V)
7. Audio generator
8. Audio attenuator
9. Alignment tapes
   Part code: ST-C1: 70909227
10. Alignment screw driver (jig)
11. Color pattern generator
12. Video sweep generator

< Color bar signal >

Color bar signals of 75 % recorded on the alignment tapes are shown in Fig. 2-1-1.

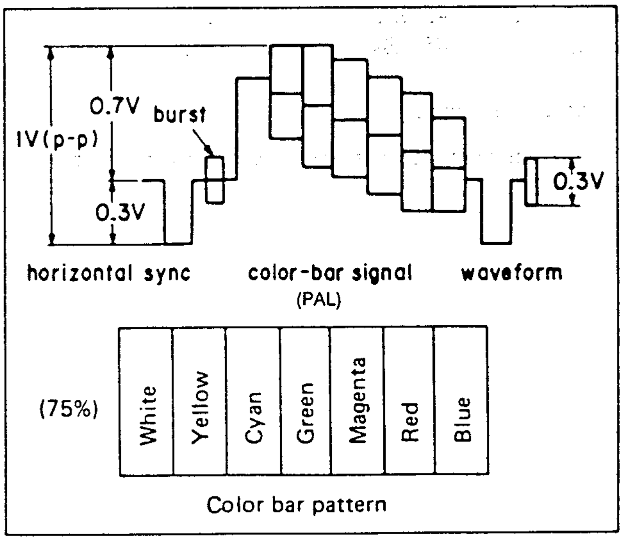
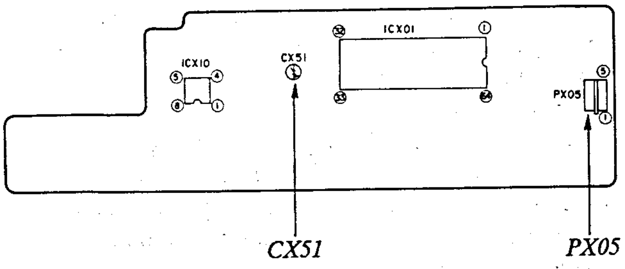

1V(p-p)
0.7V
burst
0.3V
0.3V
horizontal sync
color-bar signal
waveform
(PAL)
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Color bar pattern

Fig. 2-1-1

2-1.Timer Circuit


ICX01
ICX10
CX51
PX05
CX51
PX05

Timer PC Board

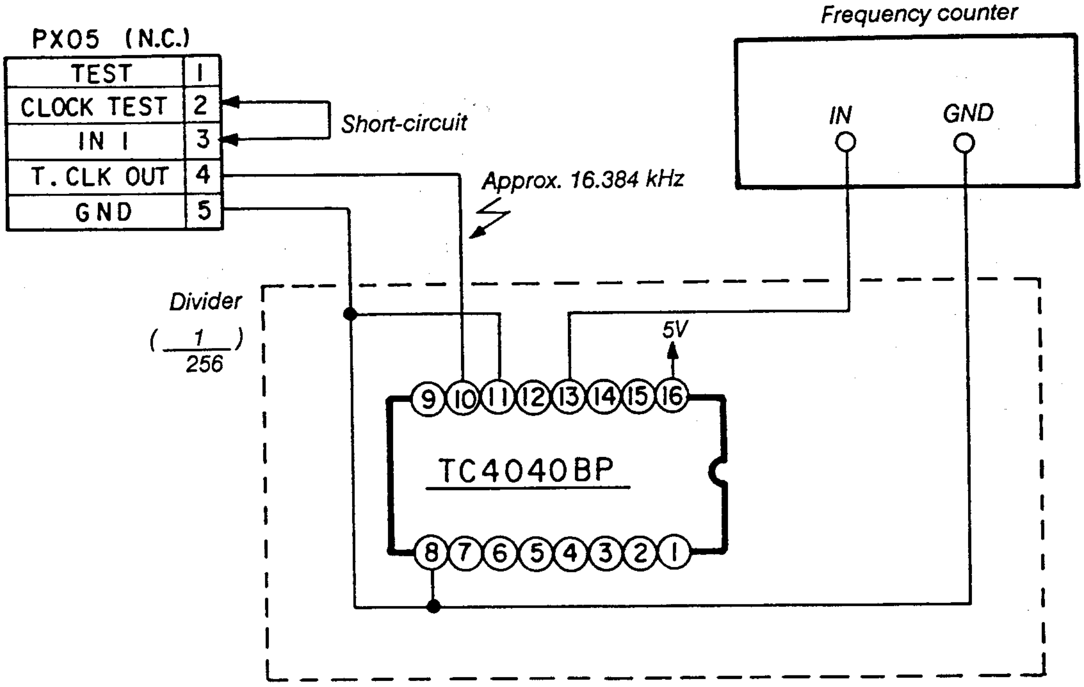
Room temperature (°C)	Specified value
16	63.9999 ± 0.0001
18	64.0001 ± 0.0001
20	
22	64.0002 ± 0.0001
24	
26	
28	
30	64.0001 ± 0.0001
32	
34	63.9999 ± 0.0001

2-1-1. Clock (32.768kHz) Adjustment

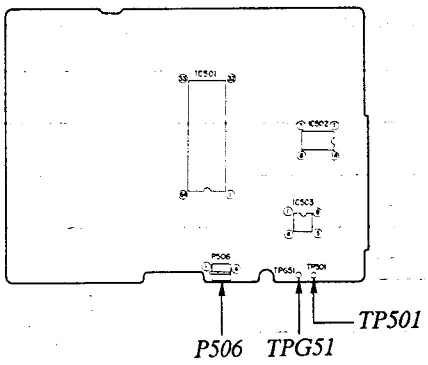
Test point: PX05
Test equipment: Frequency counter
Adjusting point: CX51

1. Short circuit the pins 2 and 3 of PX05.
2. Connect the divider to pins 4 and 5 of PX05.
3. Connect the frequency counter to the divider .
4. Adjust CX51 so that the frequency counter shows the specified value shown in the table at right. Select a specified value from the table according to the room temperature.

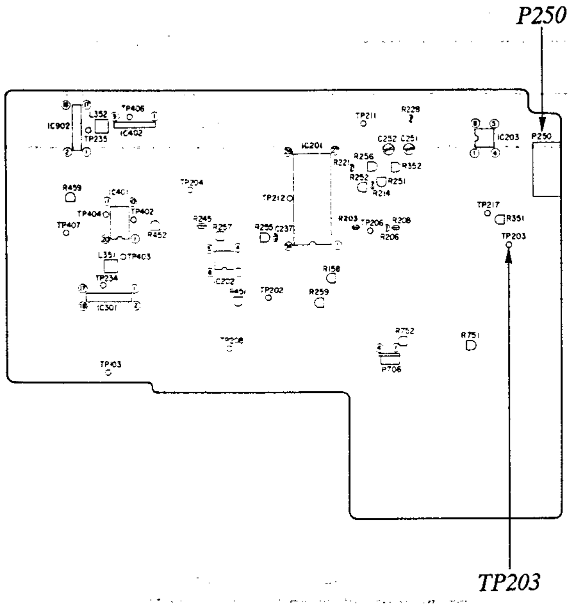
Note:
Perform the adjustment under room temperature of 16 ° C ~ 34°C


PX05 (N.C.)
TEST 1
CLOCK TEST 2
IN 1 3
T. CLK OUT 4
GND 5
Short-circuit
Approx. 16.384 kHz
Frequency counter
IN
GND
Divider
(1/256)
5V
9 10 11 12 13 14 15 16
TC4040BP
8 7 6 5 4 3 2 1

2-2.Servo Circuit



Logic/Servo PC Board

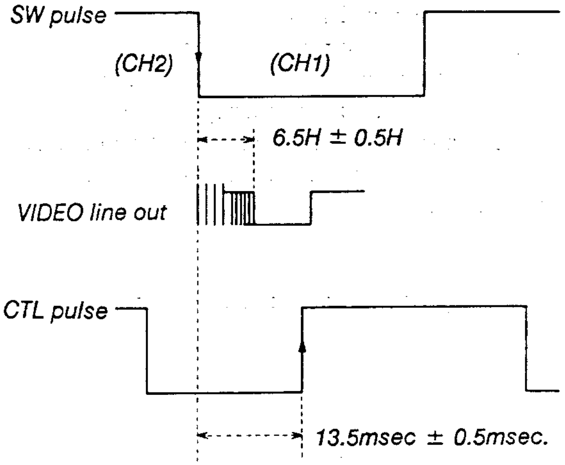


Main PC Board

2-2-1. Playback Phase (PG)

Test point: Pin 2 of P506 (SW pulse),
TP203 (Video line out)
Test equipment: Oscilloscope
Adjusting point: TP501, TPG51

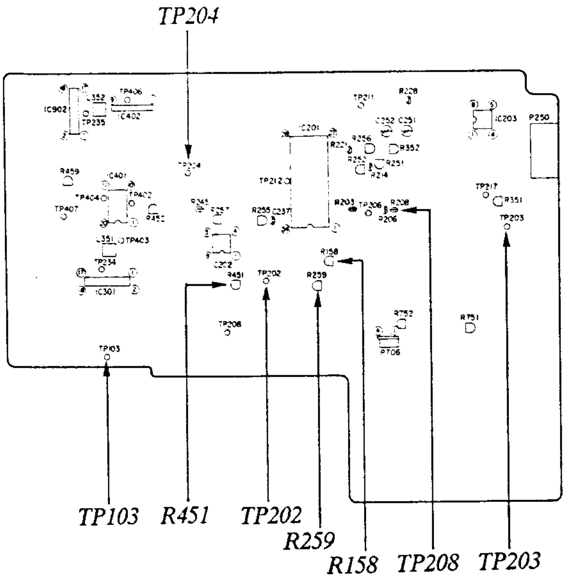
1. Press the tracking up button and tracking down button simultaneously during the play back (PAL SP mode) to set the tracking at the center.
2. Check that the phase difference between the falling edge of the SW pulse (pin 2 of P506) and the rising edge of the CTL pulse (pin 1 of P506) shows 13.5 ± 0.5 msec.
3. Observe the envelope waveform of pin 4 of P506 and make sure X adjustment and linearity adjustment are performed, and C-sync signal is input to pin 12 of IC501 during the playvack mode.
4. Short circuit TP501 (PG TEST) and TPG51 (GND) for approx. 1 sec., and enter PG Auto adjustment mode.
5. Perform PG Auto adjustment for approx. 10 sec. During this adjustment, the FIP blinks and the mode transmission is not accepted.
   After adjustment:
   After 10 sec. of FIP blinking, stop blinking operation on the FIP and FIP enters into the normal display mode → still mode for 1 sec. (after approx. 2 sec. of audio mute) → enter into the play back mode.
   NG adjustmnet:
   FIP continues to display play mode. All the display item is lightning.
6. Make sure the display shows the play mode. Between the falling edge and standing edge of the SW pulse show 6.5H ± 0.5H from the V-sync front edge of the video signal.



2-2-2. Pseudo V

Test equipment: Color monitor
Adjusting point: Tracking button

1. Play back the monoscope or color bar signal on the alignment tape ST-C1.
2. Adjust tracking up and down button to stop the center part of the screen in the still mode.

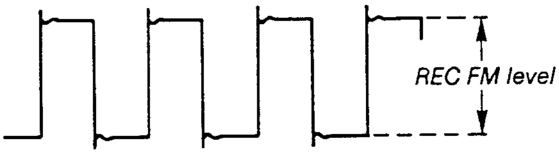


Main PC Board

2-3-4. REC FM Level

Test point: TP202
Test equipment: Oscilloscope
Adjusting point: R158

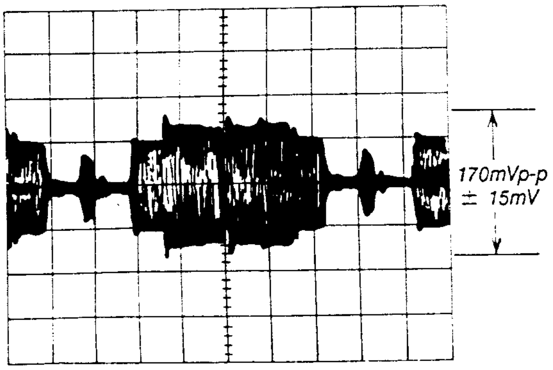
1. Connect the plug into the line input terminal and set the mode to the REC (SP) under the no signal condition.
2. Connect the oscilloscope to TP202.
3. Adjust R158 so that FM amplitude level shows 0.35 ± 0.02Vp-p.



2-3-5. REC Color Level

Test point: TP204, TP208
Test equipment: Oscilloscope
Adjusting point: R451

1. Feed the PAL color bar signal to the line input terminals and set the VTR to the REC (SP) mode.
2. Connect the oscilloscope to TP208 and trigger the scope with HD pulse at TP204.
   Adjust the scope so that a waveform is displayed for approx. 2H period.
3. Adjust R451 so that amplitude of the red portion shows 0.17 ± 0.02Vp-p.

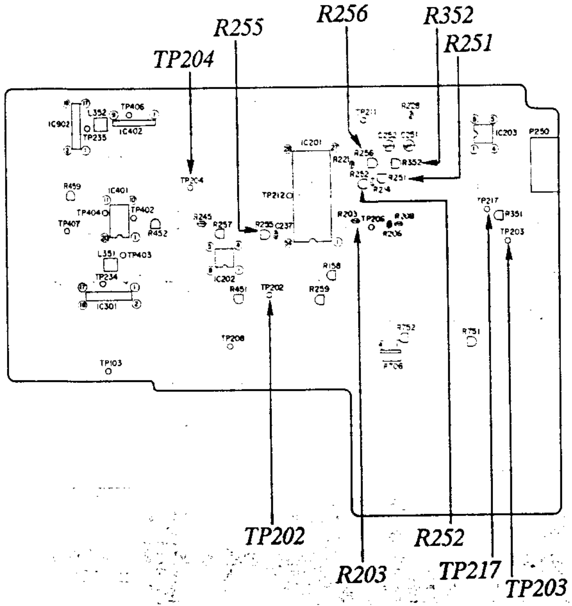


2-3-6. Picture Sharpness Preset

Test point: TP103, TP203
Test equipment: Oscilloscope
Adjusting point: R259

1. Place the sharpness control in its center click position.
2. Record and play back a video sweep signal fed to the line input terminals.
3. Connect the oscilloscope to TP203 and trigger the scope with a signal at TP103.
   Adjust the scope so that a waveform is displayed for more than 1V (vertical sync) period.
4. Adjust R259 so that relative amplitude at 2 MHz shows 1.4 ± 0.2 (scale), where amplitude at 500 KHz is assumed as "A" (A = 2 scale).
5. Confirm that 2 MHz level increases when the sharpness control is turned clockwise and decreases when turned counterclockwise. Then replace the control at its center click position.

2-3.Video Circuit



Main PC Board

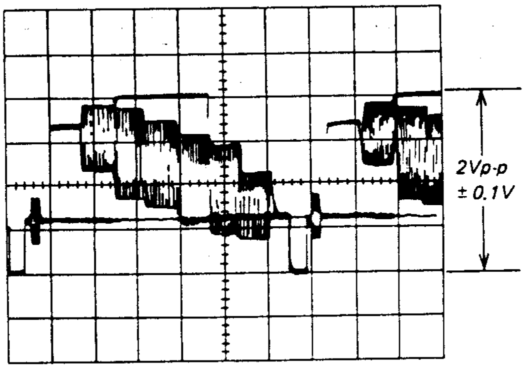
Note:

- * Place the RENTAL/EDIT/HQ switch in the HQ position.
- * Except otherwise specified, place the Video System SW in the AUTO position.
- * The line output terminals should not be loaded.

2-3-1. Video AGC Level

Test point: TP204, TP217
Test equipment: Oscilloscope
Adjusting point: R255

1. Feed a color bar signal (PAL) to the line input terminals and set the VTR to the EE mode.
2. Connect the oscilloscope to TP217 and trigger the scope with HD pulse at TP204.
   Adjust the scope so that a waveform is displayed for 2H period.
3. Adjust R255 until amplitude of 2.0Vp-p ± 0.1V is obtained between sync tip and 100% white level.



2-3-2. Sync Tip Frequency

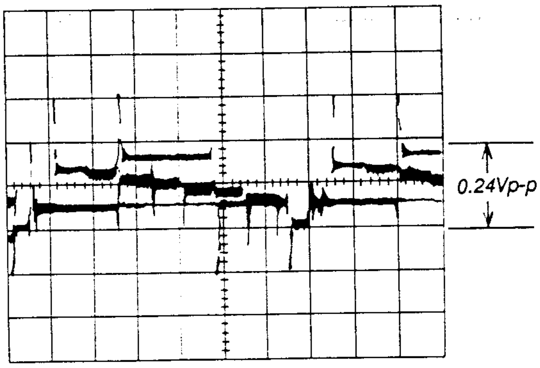
Test point: TP202
Test equipment: Frequency counter
Adjusting point: R251, R352

1. Short circuit the line input terminals with a phone jack and set the VTR to the REC mode.
2. Connect the frequency counter to TP202.
3. Place thye Video System SW in the PAL/MESECAM position. Adjust R251 to obtain frequency reading of 3.80 ± 0.1MHz.
4. Place the Video System SW in the NTSC position. Adjust R352 to obtain frequency reading of 3.40 ± 0.1 MHz.

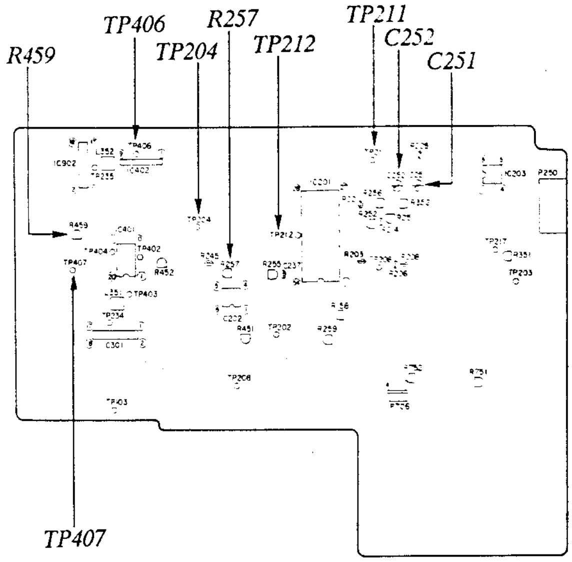
2-3-3. FM Deviation

Test point: R203 (R252 side), TP203, TP204
Test equipment: Oscilloscope
Adjusting point: R252, R256

1. Feed the color bar signal (PAL) to the line input terminal.
2. Connect the oscilloscope to R203 (R252 side) and trigger the scope with a HD pulse at TP204. Adjust the scope so that a waveform is displayed for approx. 2H period.
3. Adjust R252 to obtain the amplitude of approx. 0.24Vp-p between the sync tip and the white peak. After adjusting R256 (Play back Y signal output level) with the method 2-2-10, repeat above adjustment procedures, and then adjust R252 (FM deviation control) so that the playback Y signal output level at TP203 shows 2.0 ± 0.15Vp-p.



Horizontal axis: 10ms/div.
Vertical axis: 0.05V/div.

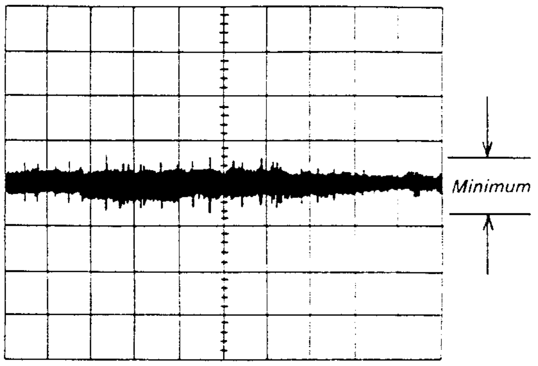


Main PC Board

2-3-9. Y Comb-filter Balance

Test point: TP204, TP212, TP213
Test equipment: Oscilloscope
Adjusting point: R257

1. Play back the test tape, ST-C1 (PAL color bar signal).
2. Unsolder the slit beside TP402.
3. Connect the oscilloscope (CH-1) to TP212 and trigger the scope with HD pulse at TP204.
4. Adjust R257 so that amplitude on the scope display shows minimum. (Ignore glitches.)
5. Solder the slit.



2-3-10. 4.43 MHz and 3.58 MHz XO Frequency

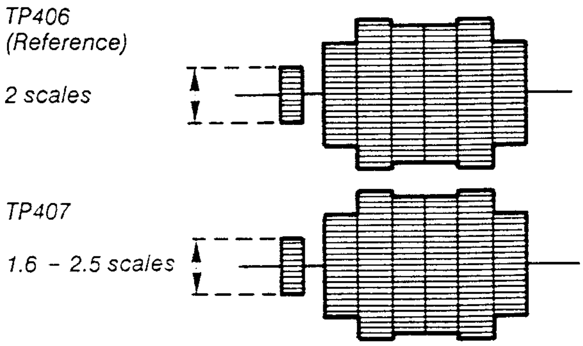
Test point: TP211
Test equipment: Frequency counter
Adjusting point: C251, C252

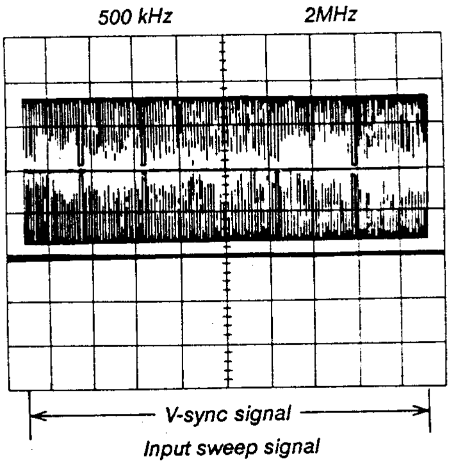
1. Play back the alignment tape, ST-C1 (NTSC color bar signal).
2. Connect a frequency counter to TP211 and set the measurement range to a position which gives reading accuracy of 1 Hz.
3. Place the Video System SW in the AUTO, and 3.58 position.
4. Adjust C252 trimmer until the frequency reading of 4.433619 MHz ± 50 Hz is obtained.
5. Place the Video System SW in the AUTO and 4.43 position.
6. Adjust C251 trimmer until the frequency reading of 3.579545 MHz ± 50 Hz in obtained.

2-3-11. LP STILL Color Level

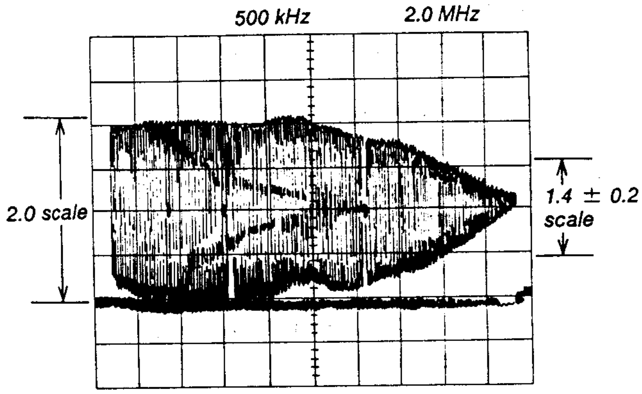
Test point: TP204, TP406, TP407
Test equipment: Oscilloscope
Adjusting point: R459

1. Play back the test tape ST-C1 (PAL color bar).
2. Set the video system switch to PAL mode.
3. Connect the oscilloscope to TP406 and TP407 and set the scope to the two-channel display mode. Trigger the scope with the HD pulse at TP204 and display the waveform for approx. 2H period.
4. Adjust R459 so that the burst level at TP407 becomes 1.6 – 2.5 scales with the burst level at TP406 set to 2 scales.

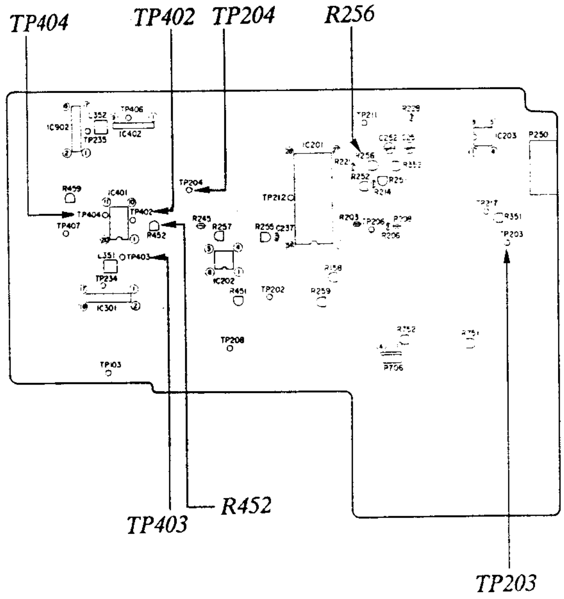




Input sweep signal



Playback waveform of TP203



Main PC Board

2-3-7. VCO Frequency

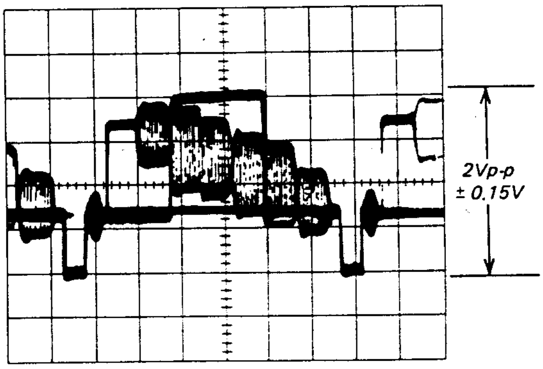
Test point: TP402, TP403, TP404
Test equipment: Frequency counter
Adjusting point: R452

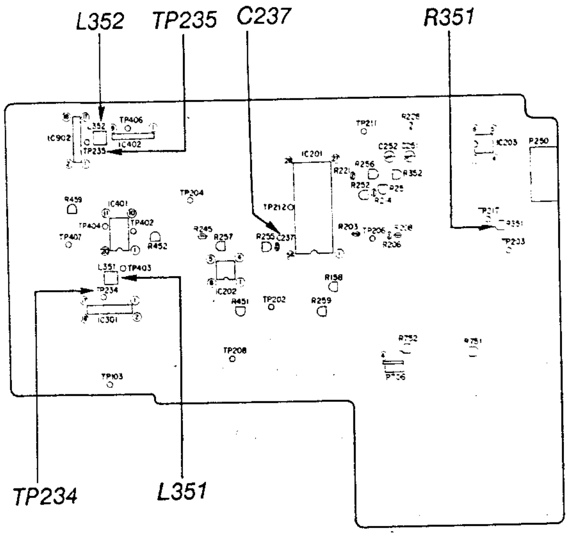
1. Feed the PAL color bar signal to the line input terminals.
2. Connect the frequency counter to TP402.
3. Connect TP403 and TP404.
4. Adjust R452 so that a frequency reading of 15.75 ± 0.1 kHz is obtained.

2-3-8. Playback Y Signal Output Level

Test point: TP203, TP204
Test equipment: Oscilloscope
Adjusting point: R256

1. Play back the test tape, ST-C1 (PAL color bar signal).
2. Connect the oscilloscope to TP203 and trigger the scope with HD pulse at TP204. Adjust the scope so that a waveform is displayed for approx. 2H period.
3. Adjust R256 so that amplitude of 2.0Vp-p ± 0.15V is obtained between the sync tip and the 100% white level.



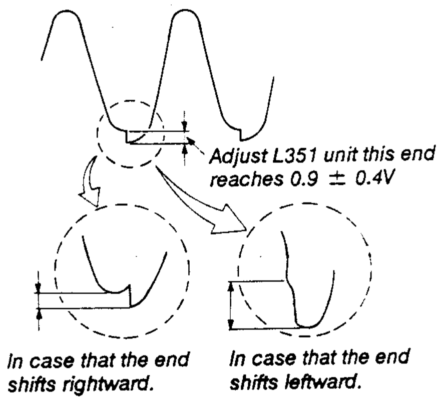

L352
TP235
C237
R351
TP234
L351

Main PC Board

2-3-12. MESECAM Detection Level

Test point: TP234
Test equipment: Oscilloscope
Adjusting point: L351

1. Feed the SECAM color bar signal to the line input terminal and set the VTR to REC mode.
2. Connect the oscilloscope to TP234.
3. Adjust L351 until the detector output waveform ends reaches 0.9 ± 0.4V.


Adjust L351 unit this end reaches 0.9 ± 0.4V
In case that the end shifts rightward.
In case that the end shifts leftward.

2-3-13. SECAM Detection Level (V-880MS only)

Test point: TP235
Test equipment: Oscilloscope
Adjusting point: L352

1. Play back the SECAM alignment tape (color bar signal) ST-C1.
2. Connect the oscilloscope to TP235.
3. Adjust L352 until the detector output waveform ends reaches 0.9 ± 0.4V.

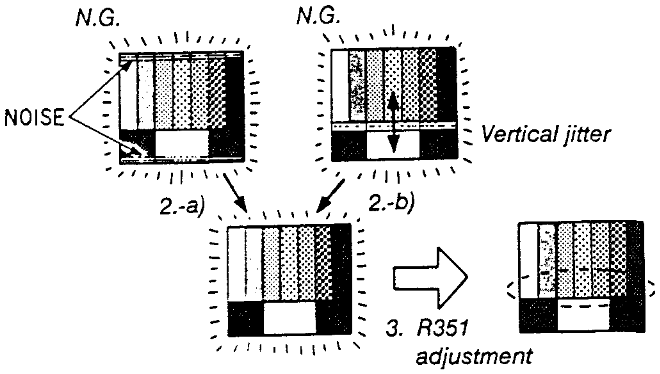
2-3-14. NTSC Skew Correction Delay Output Level

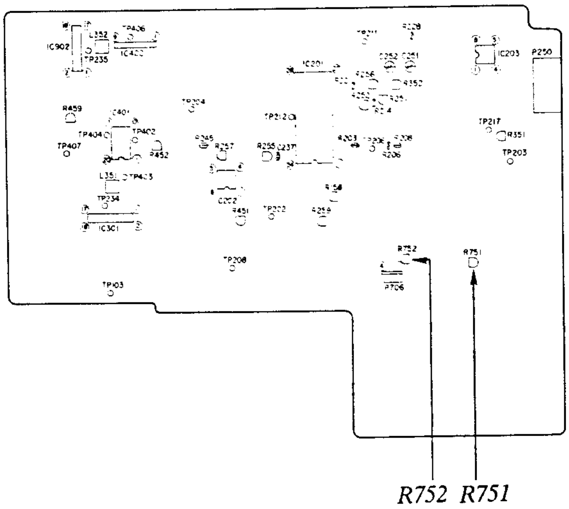
Test point: Line output terminal
Test equipment: Monitor TV
Adjusting point: R351

1. Connect the line output terminal to the monitor TV, and feed the NTSC color bar signal. Play back the alignment tape (ST-C1). And set the VTR to the still mode.
2. In this case, make sure the following points:
   a) Slow tracking has not been adjusted so that less noise appear on the screen, especially on the top side of the screen.
   b) V-Lock adjustment has not been made so that boundary between the stear signal and the 100% white does not show vertical jitter on the screen.
3. Adjust R351 to minimize the flicker on the screen (especially at the boundary between the stear signal and 100% white.).

Note:

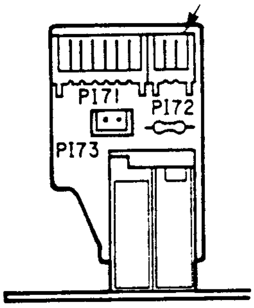
In this case, it is recommended to remove color on the monitor TV by color density adjusting VR, or by short circuitting both ends of C237.
When the power block is exchanged or the power voltage is suspected to be changed, it is necessary to perform this adjustment.


N.G.
N.G.
NOISE
Vertical jitter
2.-a)
2.-b)
3. R351 adjustment



Main PC Board

Connect a millivoltmeter to PI72



ACE Head PC Board

2-4. Audio Circuit

Note:

- * Adjustments for the playback frequency response and playback output level may not be performed if the audio control head is improperly positioned on the audio track. In such a case, perform the azimuth adjustment and height adjustment perfectly, and then proceed with the adjustments 2-3-1 to 2-3-3.
- * When using alignment tapes other than those specified below always make sure that interchangeability is assured for the tapes before proceeding the adjustments.
- * Make the following adjustments with the SP/LP switch set to "SP".

2-4-1. Playback Output Level

Test point: Audio line output terminal
Test equipment: Millivoltmeter
Adjusting point: R751

1. Connect 47K ohm to the audio line output terminal and playback the alignment tape (ST-C1).
2. Adjust R751 until output level obtains –6dBs ± 0.5 dB.

2-4-2. Bias Current

Test point: Pins 1 and 2 of PI72
Test equipment: Millivoltmeter
Adjusting point: R752

1. Short circuit the audio line input terminal, creating a no input signal condition. Connect a millivoltmeter to pins 1 and 2 (GND) of PI72.
2. Set the VTR to the record mode and adjust R752 to obtain 3.0mVrms.

Note:
Value adjusted too high lowers high frequency response and too low increases distortion.

2-4-3. Record/Playback Output Level

Test point: Audio line output terminal
Test equipment: Millivoltmeter

1. Connect a 47K ohm resistor to the audio line output.
2. Feed 400 Hz, –8.0 dBs signal to the audio line input terminal and record the signal.
3. Confirm to see the playback output level is –6 dBs ± 3 dB.

SECTION 3
SERVICING DIAGRAMS

1. Inspection Procedure

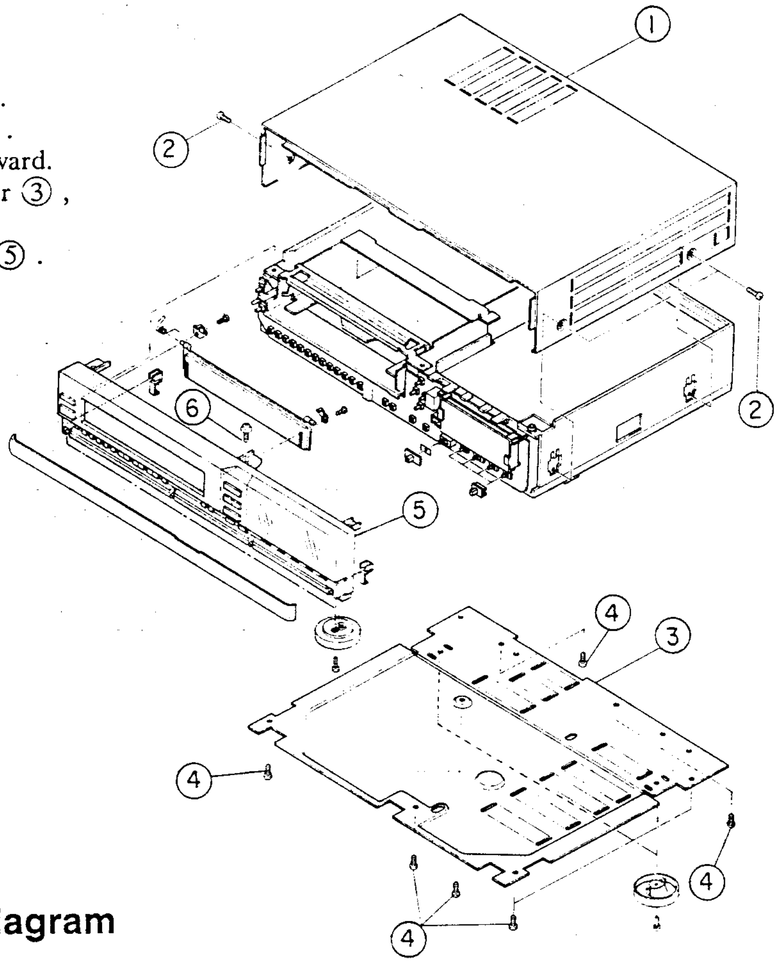
Operation steps		Items to be confirmed	Inspection block	Page	
				Block Diagram	Circuit Diagram
1. AC Plug-in	Time setting Program timer setting	Clock display Time setting operation	Power (AC system) Timer	3-11 3-15	3-32 3-36
2. Power SW ON	Timer/counter, Memory Channel selection, AFC operation, EE picture & tone quality	Mode display lamp TV receive condition, Channel select operation, AFC operation level, EE picture quality, Tone signal level	Power Logic RF reception Video (EE, Rec mode) Audio (EE, Rec mode)	3-11 3-20 3-12 3-27 3-31	3-32 3-39 3-33 3-47 3-49
3. Cassette-in and Cassette-out	Cassette-in Cassette loading Eject Cassette-out	F/L mecha. operation Cassette loading operation Eject operation Indicator lamp Abnormal sound	Logic	3-20	3-39
4. Key entry operation Remote control	REC, PLAY Cue/Review Still, Frame feeding/slow FF/REW	Indicator lamp Each mode operation (Tape drive operation) Abnormal sound	Logic Remote control	3-20	3-39 3-51
5. Special Functions Fully Automatic Play Auto Rewind	Cassette-in at Power OFF REC/PLAY/CUE	Power ON, Cassette down Automatic Play Power OFF after REW Rewind automatically after tape wound	Power Logic	3-11 3-20	3-32 3-39
6. Playback Function Picture Sharpness Tone Quality Others	PLAY (Test tape: ST-C1) Cue/Review Still/Slow	Resolution, S/N Hue, Saturation, Color unevenness, Color dropout, Sound distortion, Level variation, Picture noise, Jitter Picture swing, Skew distortion, Flicker, Beat	Video PLAY system Audio PLAY system Servo system	3-27 3-31 3-20	3-47 3-49 3-39
7. REC/PLAY Functions Picture Sharpness Tone Quality Others	REC/PLAY	Resolution, S/N Hue, Saturation, Color unevenness, Color dropout, Sound distortion, Level variation, Picture noise, Jitter Picture swing, Skew distortion, Flicker, Beat	Video PLAY system Audio PLAY system Servo system	3-27 3-31 3-20	3-47 3-49 3-39

How to use the table

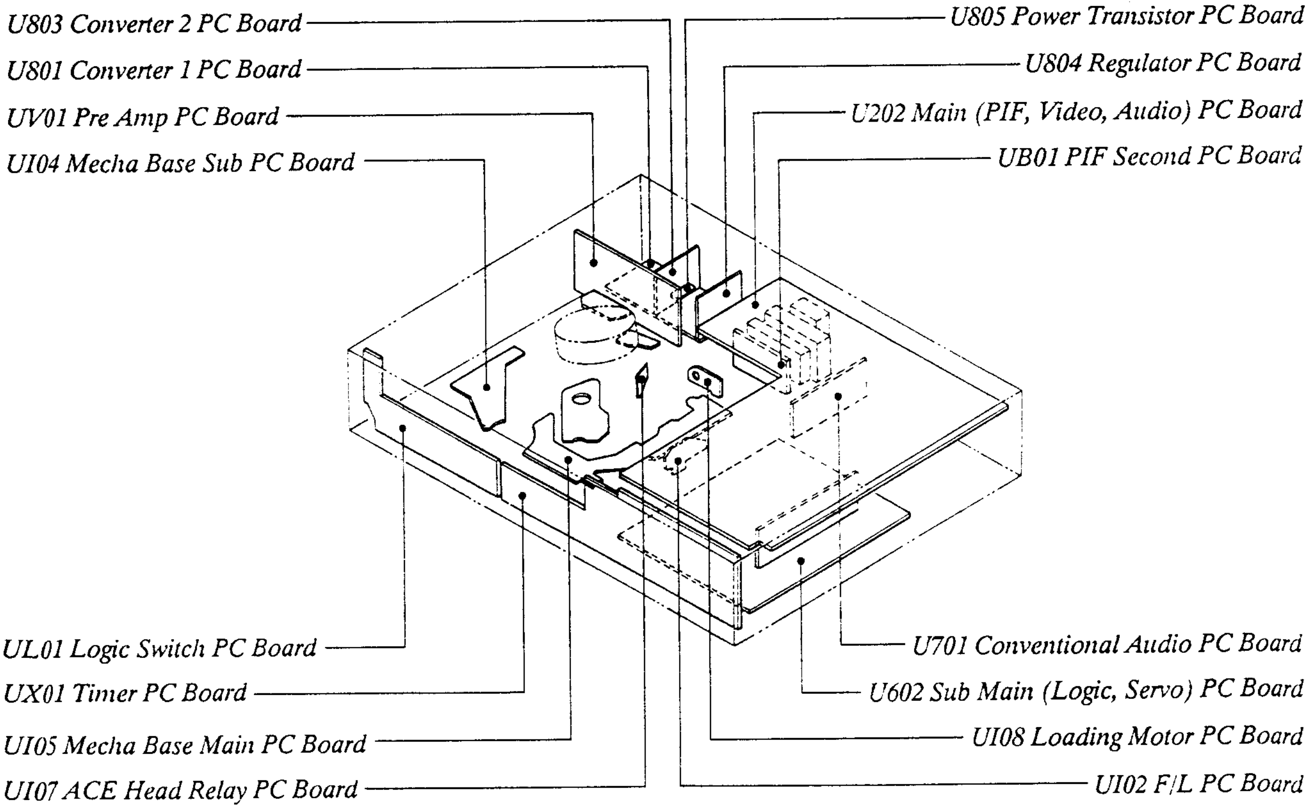
1. When inspecting a defective VTR, proceed according to the steps shown in the table.
2. Check the items to be confirmed for each operation step.
3. If a problem is found on the item, check waveforms (level) referring to the block diagram relating to the items.
4. Use PC board pattern diagram and schematic diagram to examine the circuit precisely.
5. After completion of the repair work, check steps 1 – 7 again.

2. Removal of Cabinet

1. Disconnect power cord plug from AC outlet.
2. Remove 4 screws ② securing top cover ① .
3. Remove the top cover ① by sliding it backward.
4. Remove 10 screws ④ securing bottom cover ③ , then remove the bottom cover.
5. Remove the screw ⑥ securing front panel ⑤ .
6. Remove the front panel ⑤.

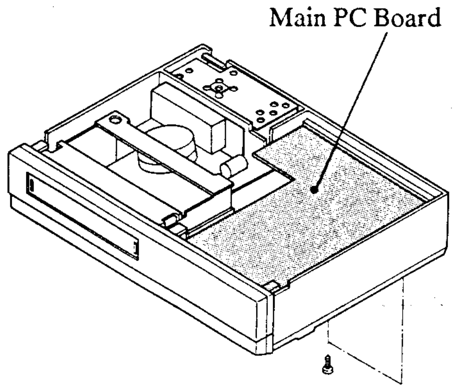

①
②
②
⑥
⑤
④
③
④
④
④

3. Electrical Units Location Diagram


U803 Converter 2 PC Board
U801 Converter 1 PC Board
UV01 Pre Amp PC Board
UI04 Mecha Base Sub PC Board
U805 Power Transistor PC Board
U804 Regulator PC Board
U202 Main (PIF, Video, Audio) PC Board
UB01 PIF Second PC Board
UL01 Logic Switch PC Board
UX01 Timer PC Board
UI05 Mecha Base Main PC Board
UI07 ACE Head Relay PC Board
U701 Conventional Audio PC Board
U602 Sub Main (Logic, Servo) PC Board
UI08 Loading Motor PC Board
UI02 F/L PC Board

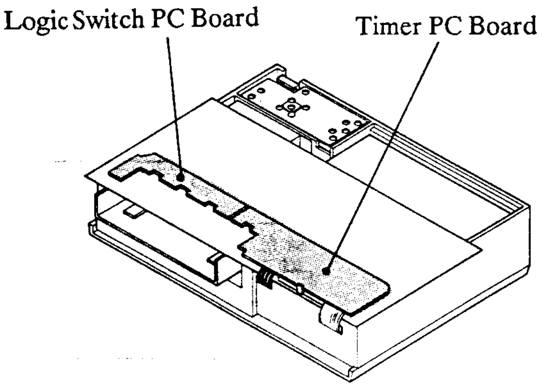
4. Standing PC Boards for Servicing

Main (PIF, Video, Audio) PC Board

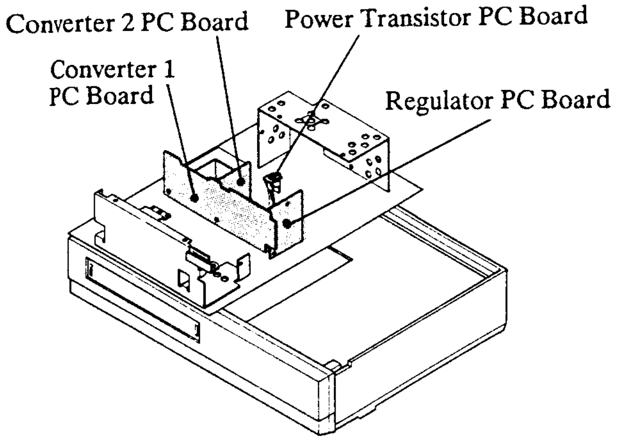

Main PC Board

Note:
Before removing the main PC Board, remove 2 screws from the bottom plate.

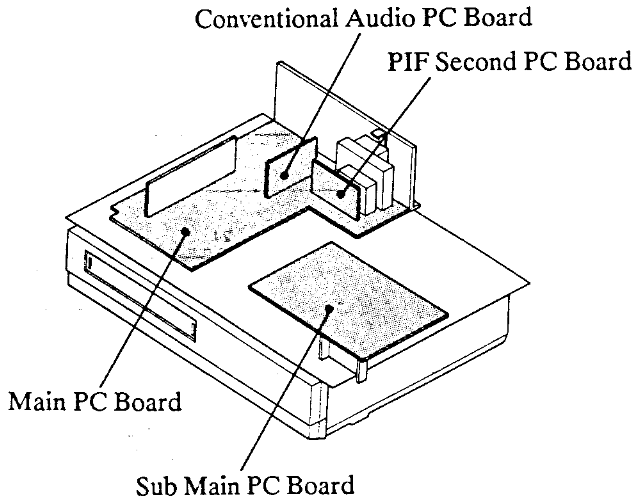
Timer, Logic Switch PC Board


Logic Switch PC Board
Timer PC Board

Regulator, Power Transistor, Converter 1, Converter 2 PC Board

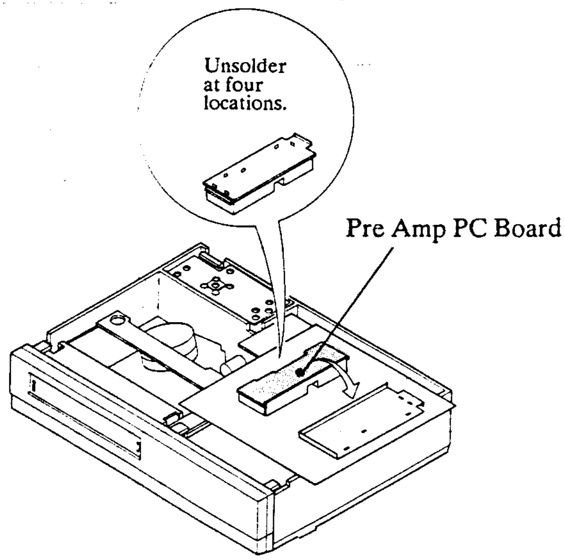

Converter 2 PC Board
Power Transistor PC Board
Converter 1 PC Board
Regulator PC Board

Main (PIF, Video, Audio), Sub Main (Logic, Servo), PIF Second, Conventional Audio PC Board


Conventional Audio PC Board
PIF Second PC Board
Main PC Board
Sub Main PC Board

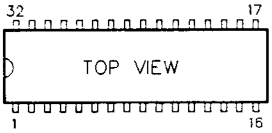
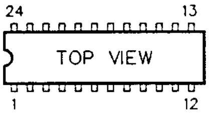
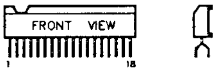
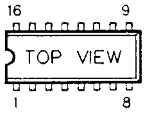
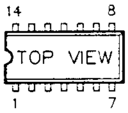
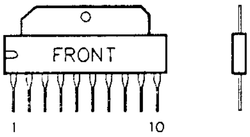
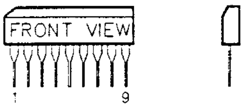
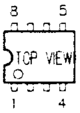
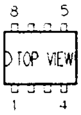
Pre Amp PC Board

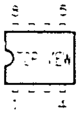
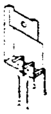
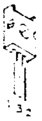
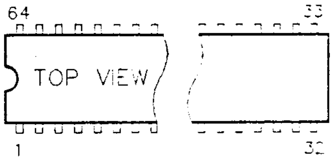
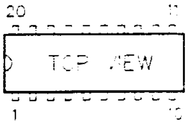
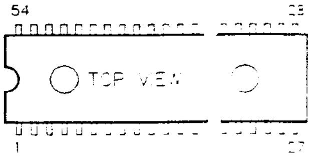
Remove the shield plate.


Unsolder at four locations.
Pre Amp PC Board

5. Part Configuration and their Symbols

1. ICs

NAME	SHAPE
BA7765AS	 32 17 TOP VIEW 1 16
AN3385NK-A	 24 13 TOP VIEW 1 12
BA7025L	 FRONT VIEW 1 18
TC4021	 16 9 TOP VIEW 1 8
NJM2902N BA10324 MC14013BCP	 14 8 TOP VIEW 1 7
TA7291P	
LVA523S NJM2234S TA75393P	 FRONT VIEW 1 9
BR93C46	 8 5 TOP VIEW 1 4
BA10393	 8 5 TOP VIEW 1 4

NAME	SHAPE
TL8809P TL8811P	 8 5 TOP VIEW 1 4
TA8710S	
PST572D PST572C	
M50957-236SP TMP91C642N3025Z	 64 33 TOP VIEW 1 32
M52063SP	 20 11 TOP VIEW 1 10
TA8802N	 54 28 TOP VIEW 1 27

PRECAUTIONS FOR PART REPLACEMENT

- * In the schematic diagram, parts marked ⚠ (ex. ⚠ F801) are critical part to meet the safety regulations, so always use the parts bearing specified part codes (SN) when replacing them.
- * Using the parts other than those specified shall violate the regulations, and may cause troubles such as operation failures, fire, etc.

SOLID RESISTOR INDICATION

Resistor	1/6W film	P type film	U type film	Solid	Oxide film	Metal film	Cement	Fuse
Symbol	None	P	U	S	R	W	W	RF

Tolerance	±2%	±5%	±10%	±20%
Symbol	G	J	None	None

* All film type and oxide film resistors are ±5%, so the tolerance symbol was not indicated for them.

CAPACITANCE INDICATION

Description	Symbol	Capacitance, unit	Capacitance allowance
Electrolytic	+─┤├─	μF	Not indicated
Special electrolytic			Indicated
Plastic film	─┤├─	μF: indicated with numbers below decimal point	Indicated below ±5% (J), indicated below ±0.5pF, not indicated for others
Ceramic		pF: indicated with numbers over decimal point	
Trimmer	─┤↗├─	pF	Not indicated

Note: No working voltage is indicated for capacitors rated at 50V except electrolytic capacitors.

WAVEFORM AND VOLTAGE MEASUREMENT

- * Measurement of waveform and voltage at each section in the color circuits was conducted with sufficient service color bar signal being received and reproduced in normal conditions.
- * Waveforms and voltage values for the remaining circuit were measured with a broadcasting signal normally received, so they may vary slightly according to the programs being received. Use them as a measure for servicing.
- * All voltage values except the waveforms are expressed in DC and measured by a digital voltmeter.

CHIP PART REPLACEMENT

(Use spare part with wire leads connected.)

1. Hold a Chip part to be removed with tweezers and apply heat to the solder at one end of the part with a soldering iron. (Fig. 1)
2. Apply heat to the solder at the other end of the part and remove it.
   The heating time should be as short as possible so the excessive heat is not applied to foil patterns and the PC Board.
3. If it is difficult to remove the part, temporarily stop the desoldering job and wait until temperature of the part lowers. Then, repeat steps 1 and 2.
4. Form leads of the replacement part (general part equivalent to the chip part) as shown in the figures and solder place. (Fig. 2)
5. Mount the replacement part so that it does not touch any other parts. (Fig. 3)

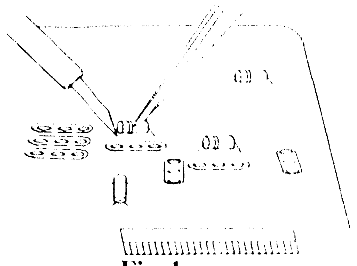


Fig. 1

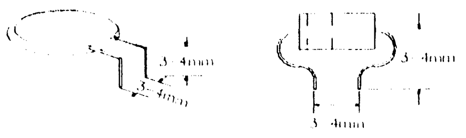


Fig. 2

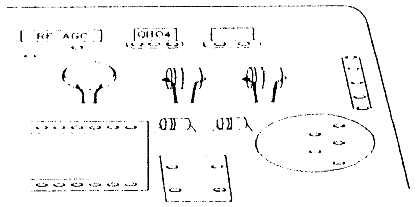


Fig. 3

REPLACING SUBMINIATURE "CHIP" PARTS

1) Required tools:

1. Fine tipped, well insulated soldering "pencil", about 30 Watts.
2. Tweezers
3. Blower type hair dryer.

2) Soldering cautions:

1. Do not apply heat for more than 3 seconds.
2. Avoid using a rubbing stroke when soldering.
3. Discard removed chips; do no reuse them.
4. Supplementary cementing is not required.
5. Use care not to scratch or otherwise damage the chips.

3) Removal (resistors, capacitors, etc.):

1. Melt the solder at one side.

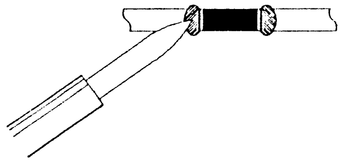


Fig. 1

2. Grasp the part with tweezers and melt the solder at the other side.

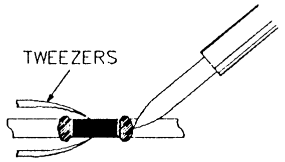


Fig. 2

3. Remove the part with a twisting motion.

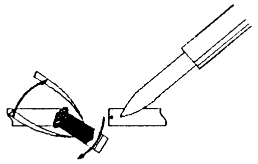


Fig. 3

4) Removal (transistors, diodes, etc.):

1. Melt the solder of one lead.

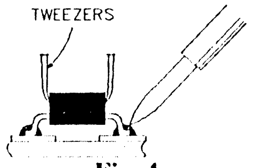


Fig. 4

2. Lift the side of that lead upward.

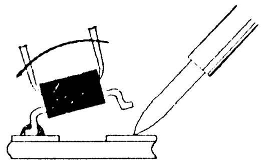


Fig. 5

3. Simultaneously heat solder the two remaining leads and lift part to remove.

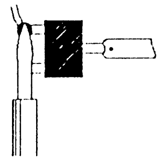


Fig. 6

5) Preheating (except for semiconductors):
Immediately before installing new resistors or capacitors, use a blower type hair dryer and preheat the part for about two minutes at approximately 150°C.

6) Replacement:

1. Presolder the contact points of the circuit pattern.

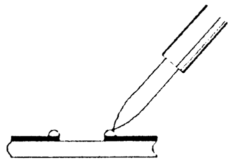


Fig. 7

2. Press the part downward with tweezers and apply the soldering pencil as indicated in the figure.

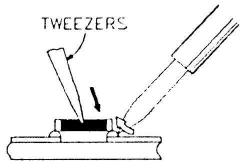
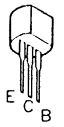
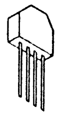
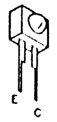
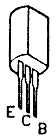
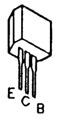
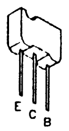
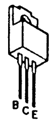
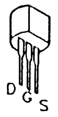
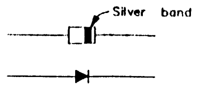
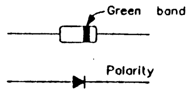
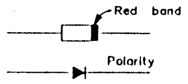
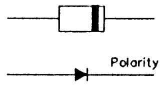
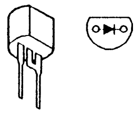
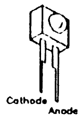
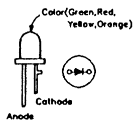
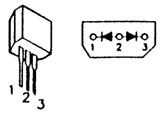


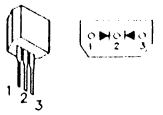
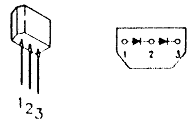
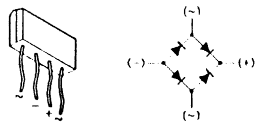
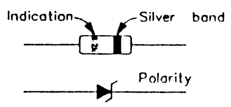
Fig. 8

2. TRANSISTORs

NAME	SHAPE
2SC1959-Y	
THS114	
STRD1706L902 PT493F PT361F	
2SC2236-Y(C) 2SA966-Y(C)	
RN1202,RN2205,2SA1048-Y RN1204,RN2206 RN1205,RN1203 RN2201,RN2202 RN1201,2SC2458-Y RN2204,2SC2668-Y	
2SD1198A-Q	
2SC3852 2SA1015-Y 2SD1413	
2SK117-Y	

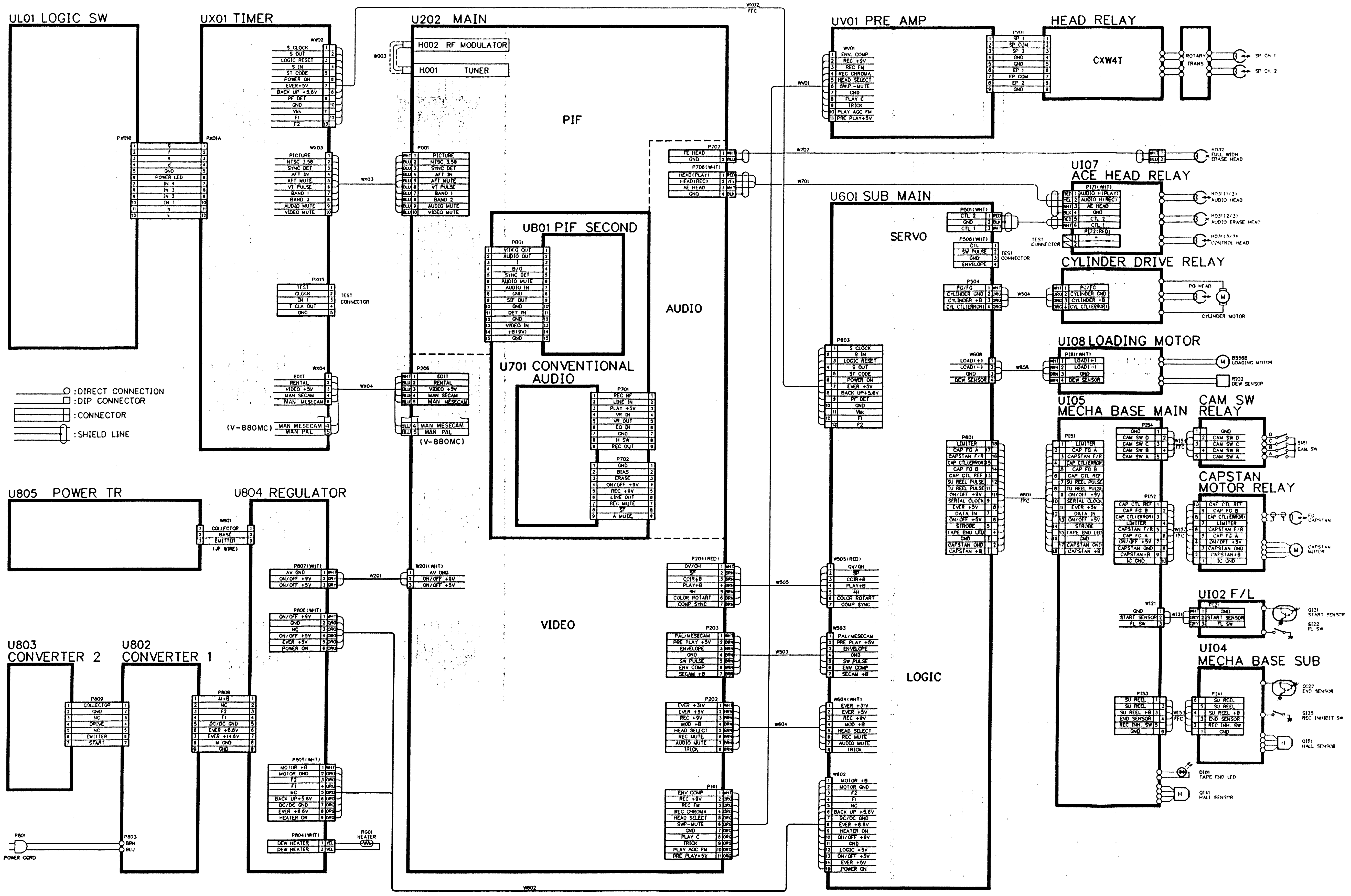
3. DIODEs

NAME	SHAPE
AG01	 Silver band
1SS177 1SS176	 Green band Polarity
EQA02-05E	 Red band Polarity
S5295G 1S1832 S3LA20(S)	
UPC574J	
GL451V	 Cathode Anode
TLG133A FA	 Color(Green,Red, Yellow,Orange) Cathode Anode
1SS200	

NAME	SHAPE
1SS201	
DA218S	
LB-156	
04AZ13Z	 Indication Silver band Polarity

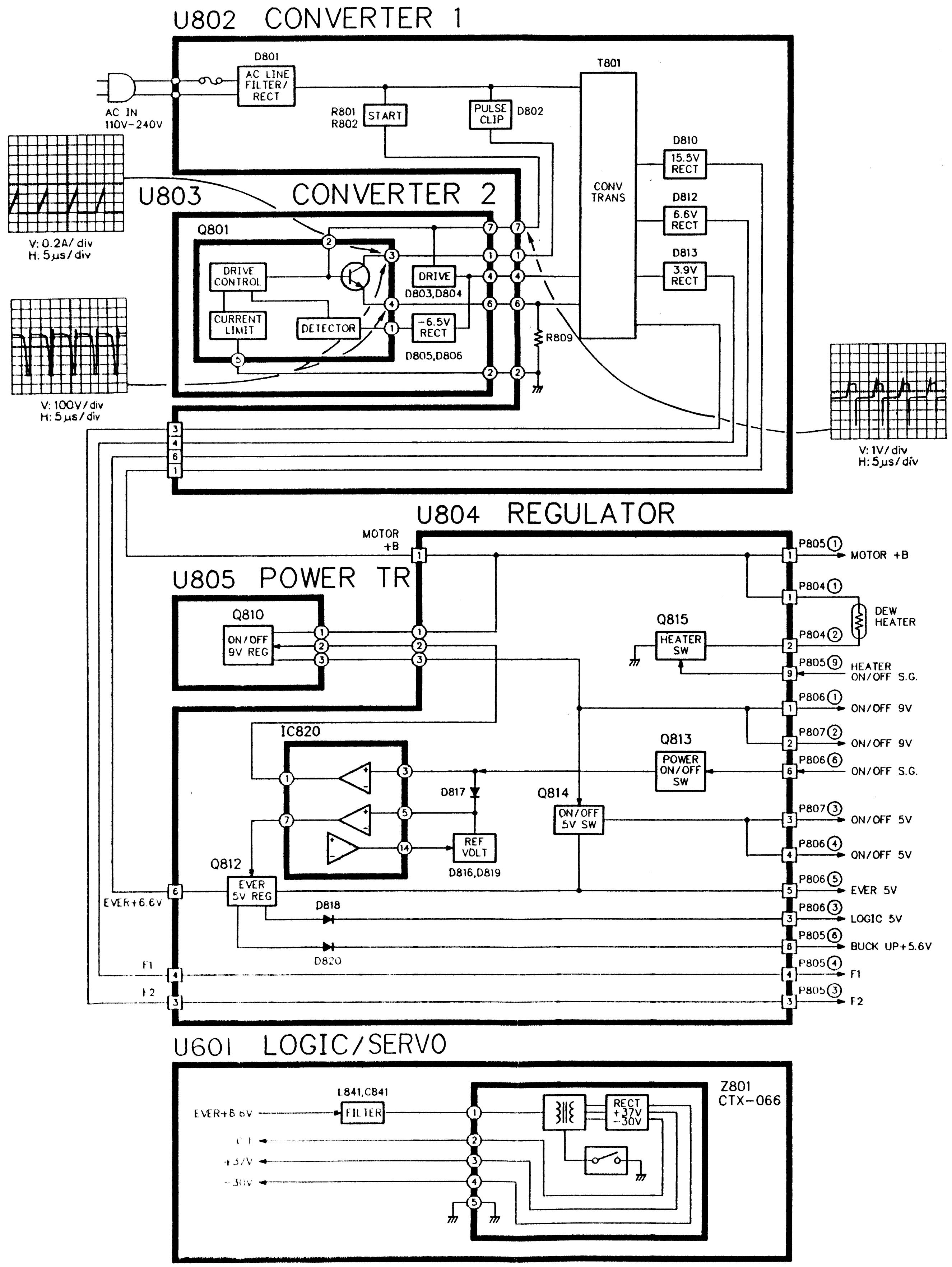
NAME	SHAPE

6. Printed Wiring Board and Schematic Diagram

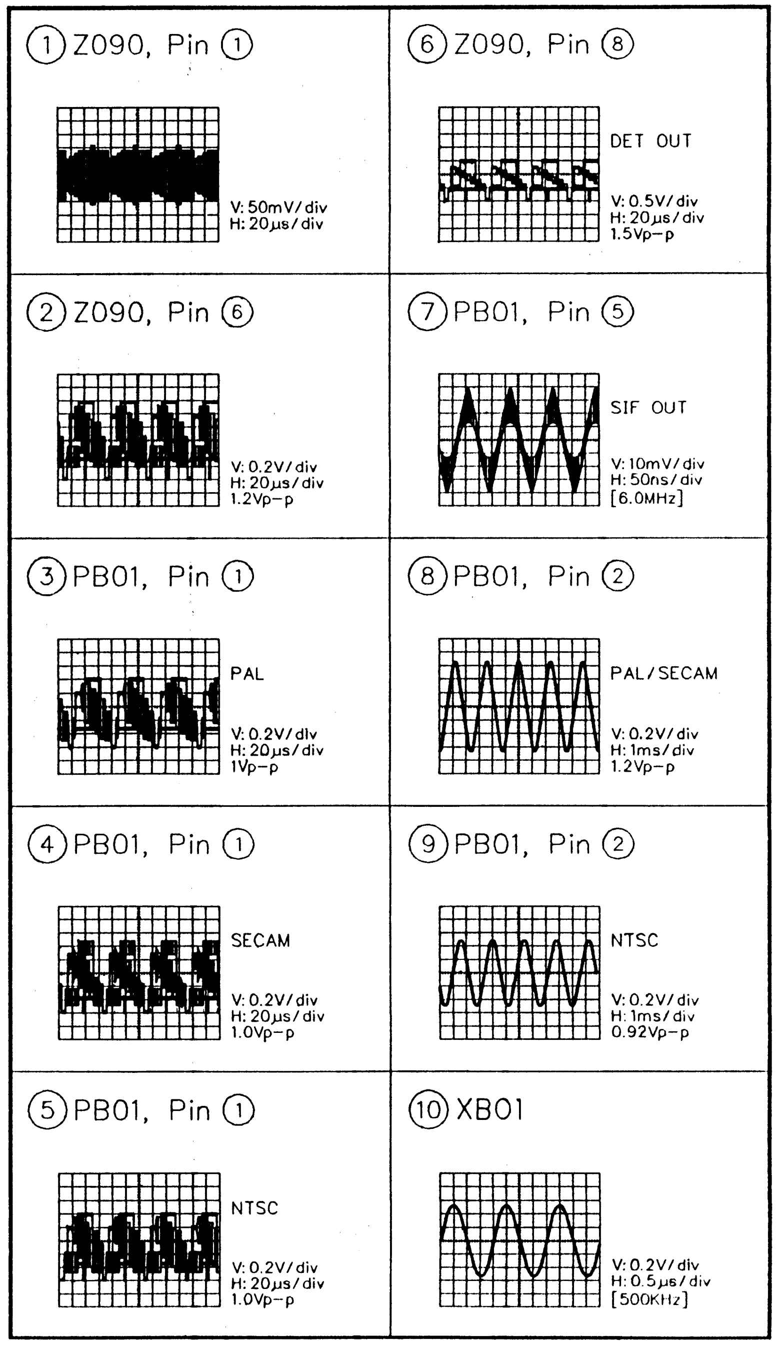

UL01 LOGIC SW
UX01 TIMER
U202 MAIN
H002 RF MODULATOR
H001 TUNER
PIF
UB01 PIF SECOND
U701 CONVENTIONAL AUDIO
AUDIO
VIDEO
UV01 PRE AMP
HEAD RELAY
CXW4T
ROTARY TRANS.
SP CH 1
SP CH 2
UI07 ACE HEAD RELAY
H032 FULL WIDTH ERASE HEAD
H031(1/3) AUDIO HEAD
H031(2/3) AUDIO ERASE HEAD
H031(3/3) CONTROL HEAD
U601 SUB MAIN
SERVO
LOGIC
CYLINDER DRIVE RELAY
PG HEAD
CYLINDER MOTOR
UI08 LOADING MOTOR
B556B LOADING MOTOR
R102 DEW SENSOR
UI05 MECHA BASE MAIN
CAM SW RELAY
S161 CAM SW
CAPSTAN MOTOR RELAY
FG CAPSTAN
CAPSTAN MOTOR
UI02 F/L
Q121 START SENSOR
S122 FL SW
UI04 MECHA BASE SUB
Q122 END SENSOR
S125 REC INHIBIT SW
Q151 HALL SENSOR
D181 TAPE END LED
Q141 HALL SENSOR
U805 POWER TR
U804 REGULATOR
U803 CONVERTER 2
U802 CONVERTER 1
POWER CORD
RG01 HEATER
TEST CONNECTOR
(V-880MC)
:DIRECT CONNECTION
:DIP CONNECTOR
:CONNECTOR
:SHIELD LINE
WX02 FFC
W003
WX03
WX04
W701
W707
WV01
W504
W608
W601 FFC
W151 FFC
W152 FFC
W153 FFC
W121
W201
W505
W503
W604
W602
W801 (JP WIRE)
W802

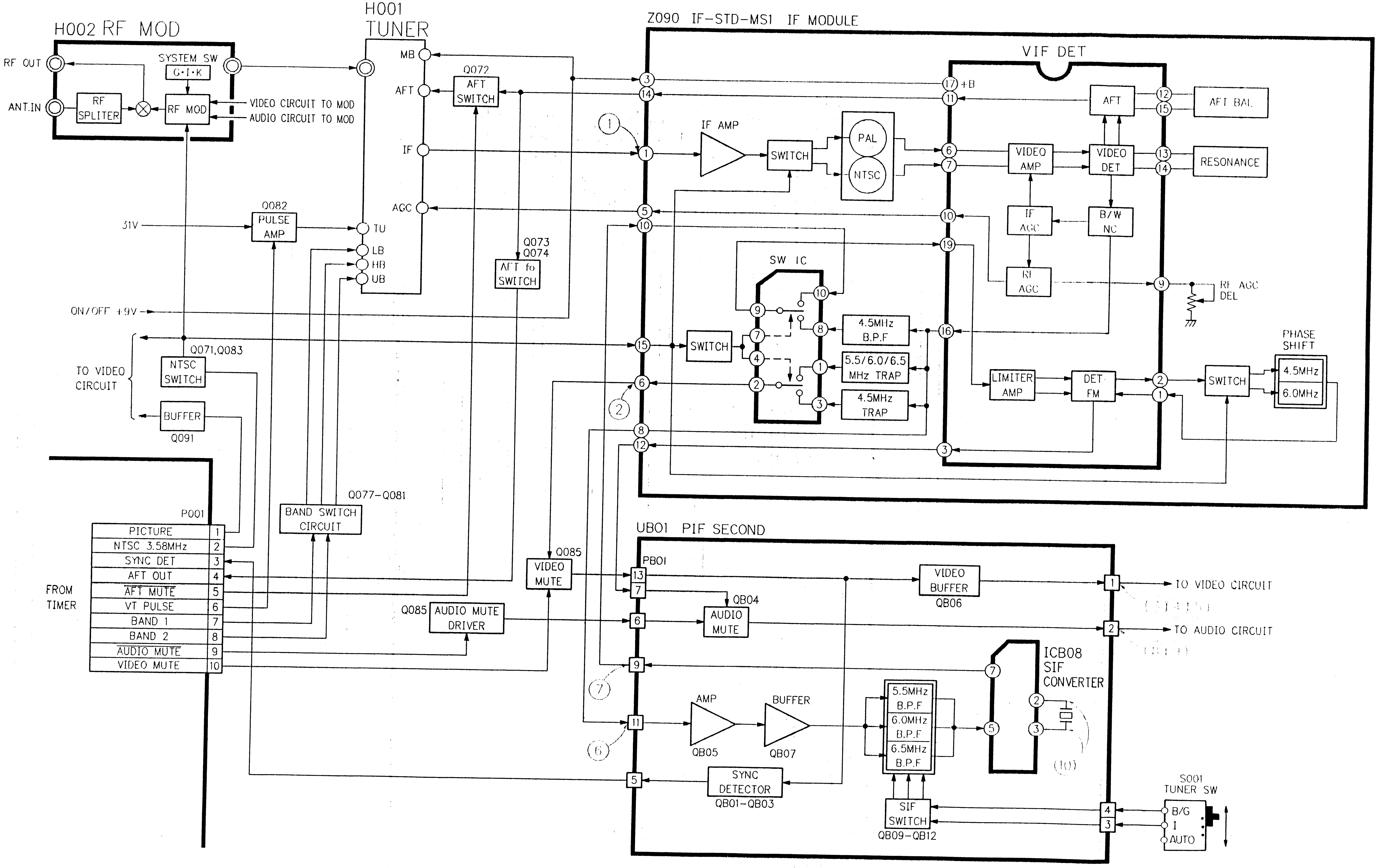
7. Block Diagrams

7-1. Power Supply Block Diagram

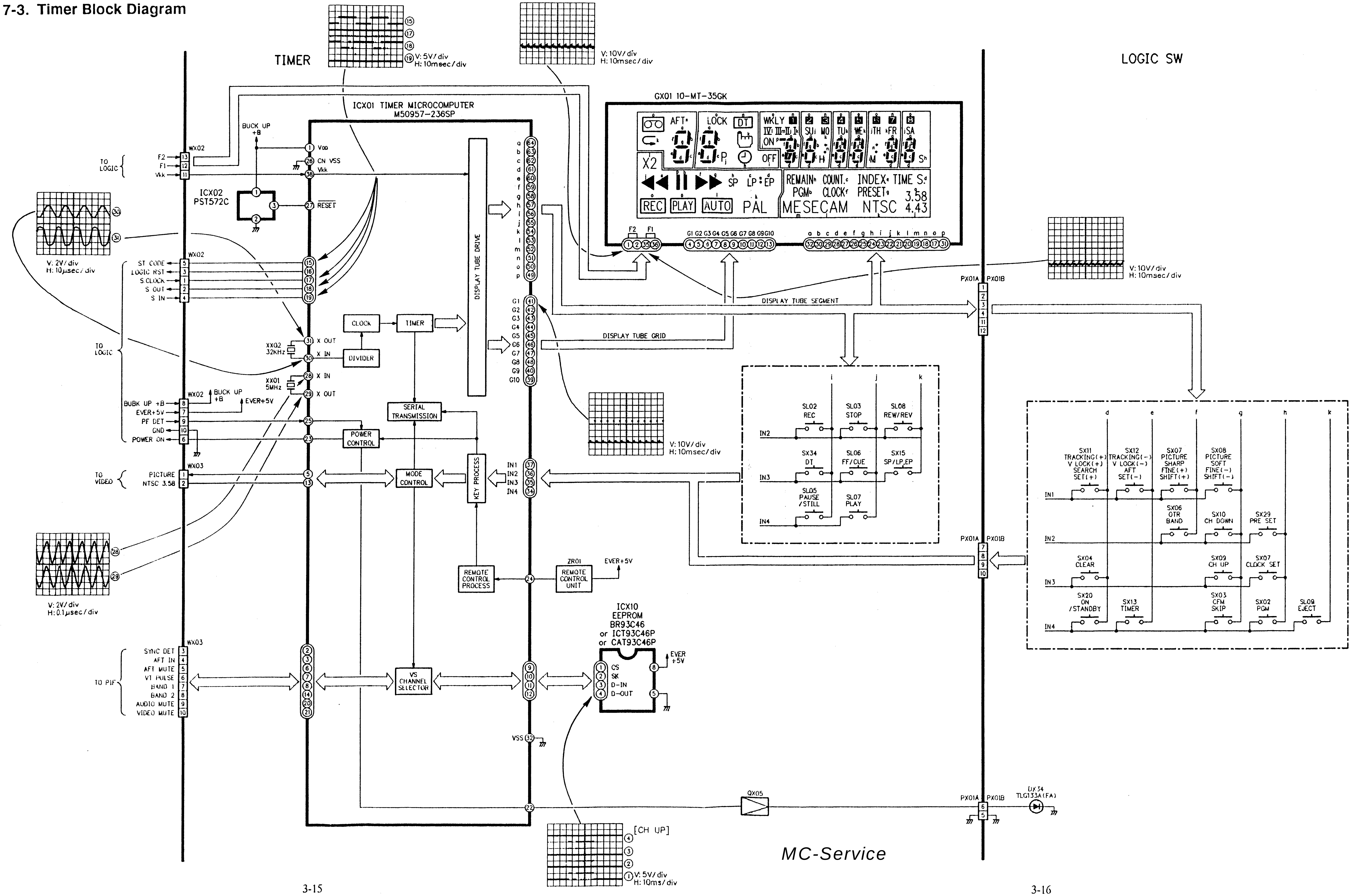

U802 CONVERTER 1
D801
AC LINE FILTER/ RECT
AC IN 110V-240V
R801 R802
START
PULSE CLIP
D802
T801
CONV TRANS
D810
15.5V RECT
D812
6.6V RECT
D813
3.9V RECT
V: 0.2A/ div H. 5µs/ div
U803 CONVERTER 2
Q801
DRIVE CONTROL
CURRENT LIMIT
DETECTOR
DRIVE
D803,D804
-6.5V RECT
D805,D806
R809
V: 100V/ div H: 5µs/ div
V: 1V/ div H: 5µs/ div
U804 REGULATOR
MOTOR +B
U805 POWER TR
Q810
ON/OFF 9V REG
Q815
HEATER SW
IC820
Q813
POWER ON/OFF SW
D817
Q814
ON/OFF 5V SW
REF VOLT
D816,D819
Q812
EVER 5V REG
EVER+6.6V
D818
D820
F1
F2
P805① MOTOR +B
P804①
DEW HEATER
P804②
P805⑨ HEATER ON/OFF S.G.
P806① ON/OFF 9V
P807② ON/OFF 9V
P806⑥ ON/OFF S.G.
P807③ ON/OFF 5V
P806④ ON/OFF 5V
P806⑤ EVER 5V
P806③ LOGIC 5V
P805⑥ BUCK UP+5.6V
P805④ F1
P805③ F2
U601 LOGIC/SERVO
L841,C841
EVER+6.6V
FILTER
F1
+37V
-30V
RECT +37V -30V
Z801 CTX-066

7-2. PIF Block Diagram



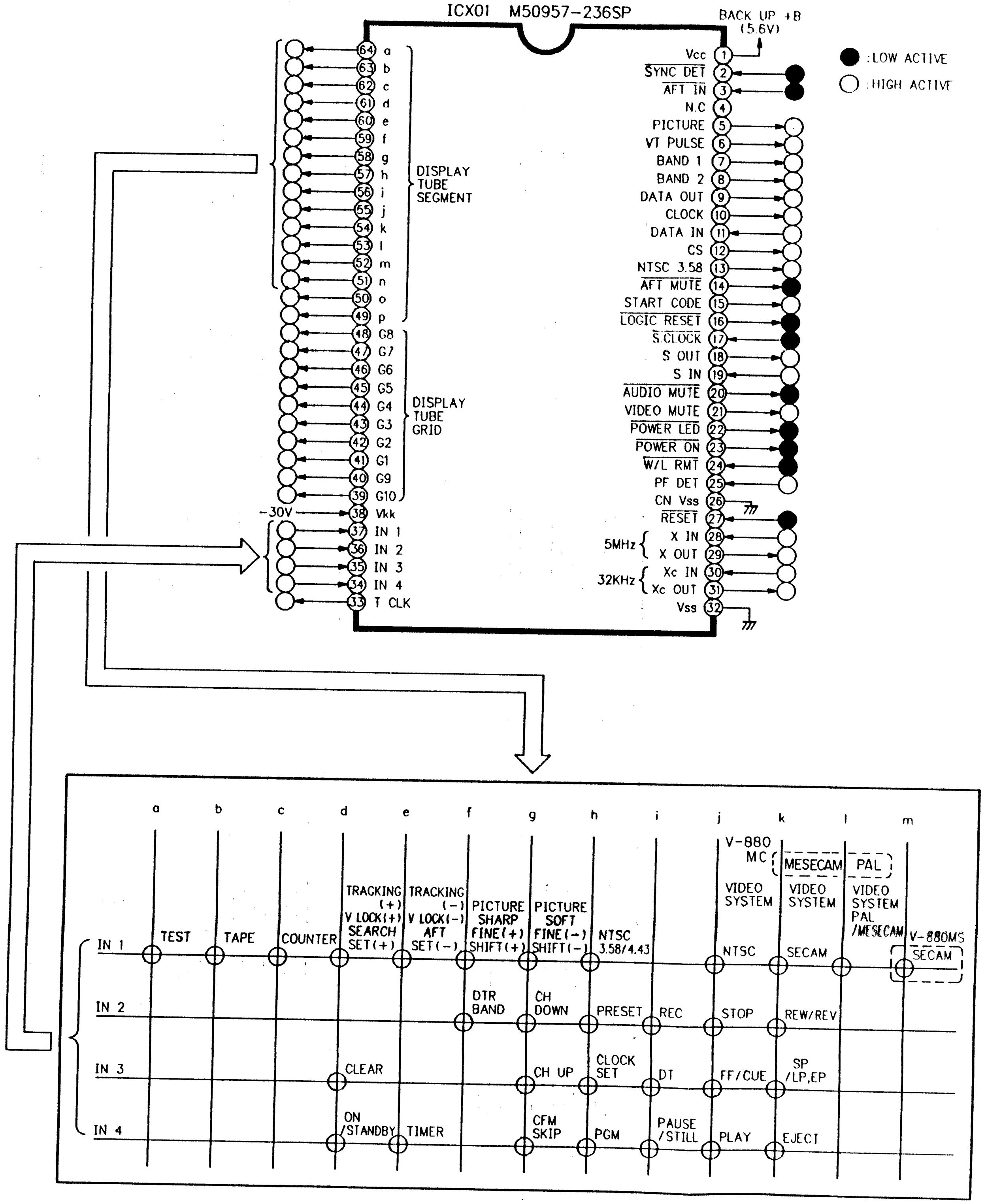

H002 RF MOD
RF OUT
ANT.IN
RF SPLITER
SYSTEM SW
G·I·K
RF MOD
VIDEO CIRCUIT TO MOD
AUDIO CIRCUIT TO MOD
H001 TUNER
MB
AFT
IF
AGC
TU
LB
HB
UB
Q072 AFT SWITCH
Q082 PULSE AMP
31V
Q073 Q074 AFT fo SWITCH
ON/OFF +9V
Q071,Q083 NTSC SWITCH
TO VIDEO CIRCUIT
BUFFER
Q091
Q077–Q081 BAND SWITCH CIRCUIT
P001
FROM TIMER
1 PICTURE
2 NTSC 3.58MHz
3 SYNC DET
4 AFT OUT
5 AFT MUTE
6 VT PULSE
7 BAND 1
8 BAND 2
9 AUDIO MUTE
10 VIDEO MUTE
Z090 IF-STD-MS1 IF MODULE
VIF DET
+B
IF AMP
SWITCH
PAL
NTSC
VIDEO AMP
VIDEO DET
AFT
AFT BAL
RESONANCE
IF AGC
B/W NC
RF AGC
RF AGC DEL
SW IC
4.5MHz B.P.F
5.5/6.0/6.5 MHz TRAP
4.5MHz TRAP
SWITCH
LIMITER AMP
DET FM
SWITCH
PHASE SHIFT
4.5MHz
6.0MHz
①
②
⑦
⑥
⑩
UB01 PIF SECOND
PB01
Q085 VIDEO MUTE
Q085 AUDIO MUTE DRIVER
QB04 AUDIO MUTE
VIDEO BUFFER QB06
TO VIDEO CIRCUIT
TO AUDIO CIRCUIT
ICB08 SIF CONVERTER
AMP
QB05
BUFFER
QB07
5.5MHz B.P.F
6.0MHz B.P.F
6.5MHz B.P.F
SYNC DETECTOR QB01–QB03
SIF SWITCH QB09–QB12
S001 TUNER SW
B/G
I
AUTO

7-3. Timer Block Diagram


TIMER
LOGIC SW
V: 5V/div
H: 10msec/div
V: 10V/div
H: 10msec/div
ICX01 TIMER MICROCOMPUTER
M50957-236SP
GX01 10-MT-35GK
BUCK UP +B
ICX02
PST572C
RESET
TO LOGIC
F2
F1
Vkk
WX02
ST CODE
LOGIC RST
S.CLOCK
S OUT
S IN
V: 2V/div
H: 10μsec/div
CLOCK
TIMER
DIVIDER
X OUT
X IN
XX02 32kHz
XX01 5MHz
DISPLAY TUBE DRIVE
DISPLAY TUBE SEGMENT
DISPLAY TUBE GRID
BUBK UP +B
EVER+5V
PF DET
GND
POWER ON
SERIAL TRANSMISSION
POWER CONTROL
TO VIDEO
WX03
PICTURE
NTSC 3.58
MODE CONTROL
KEY PROCESS
IN1
IN2
IN3
IN4
REMOTE CONTROL PROCESS
ZR01
REMOTE CONTROL UNIT
V: 2V/div
H: 0.1μsec/div
TO PIF
SYNC DET
AFT IN
AFT MUTE
V1 PULSE
BAND 1
BAND 2
AUDIO MUTE
VIDEO MUTE
VS CHANNEL SELECTOR
ICX10
EEPROM
BR93C46
or ICT93C46P
or CAT93C46P
CS
SK
D-IN
D-OUT
EVER +5V
VSS
QX05
PX01A
PX01B
DX34
TLG133A(FA)
[CH UP]
V: 5V/div
H: 10ms/div
SL02 REC
SL03 STOP
SL08 REW/REV
SX34 DT
SL06 FF/CUE
SX15 SP/LP,EP
SL05 PAUSE /STILL
SL07 PLAY
SX11 TRACKING(+) V LOCK(+) SEARCH SET(+)
SX12 TRACKING(−) V LOCK(−) AFT SET(−)
SX07 PICTURE SHARP FINE(+) SHIFT(+)
SX08 PICTURE SOFT FINE(−) SHIFT(−)
SX06 OTR BAND
SX10 CH DOWN
SX29 PRE SET
SX04 CLEAR
SX09 CH UP
SX07 CLOCK SET
SX20 ON /STANDBY
SX13 TIMER
SX03 CFM SKIP
SX02 PGM
SL09 EJECT
AFT
LOCK
DT
WKLY
SU
MO
TU
WE
TH
FR
SA
ON
OFF
X2
SP
LP
EP
REMAIN
COUNT.
INDEX
TIME S.
PGM
CLOCK
PRESET
3.58
4.43
REC
PLAY
AUTO
PAL
MESECAM
NTSC

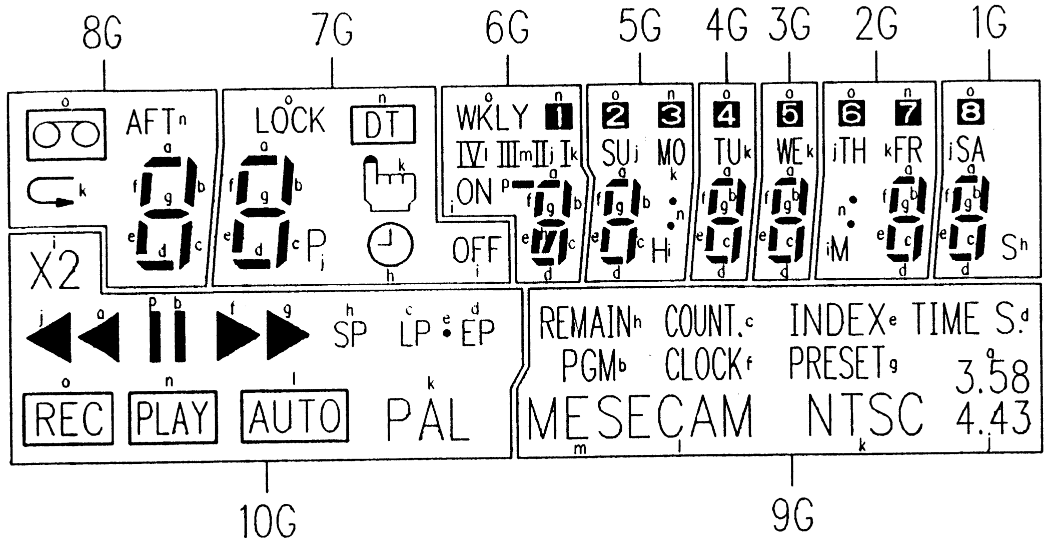
MC-Service

Timer Microcomputer Terminal Function


ICX01 M50957-236SP
BACK UP +B (5.6V)
● :LOW ACTIVE
○ :HIGH ACTIVE
64 a
63 b
62 c
61 d
60 e
59 f
58 g
57 h
56 i
55 j
54 k
53 l
52 m
51 n
50 o
49 p
DISPLAY TUBE SEGMENT
48 G8
47 G7
46 G6
45 G5
44 G4
43 G3
42 G2
41 G1
40 G9
39 G10
DISPLAY TUBE GRID
-30V
38 Vkk
37 IN 1
36 IN 2
35 IN 3
34 IN 4
33 T CLK
Vcc 1
SYNC DET 2
AFT IN 3
N.C 4
PICTURE 5
VT PULSE 6
BAND 1 7
BAND 2 8
DATA OUT 9
CLOCK 10
DATA IN 11
CS 12
NTSC 3.58 13
AFT MUTE 14
START CODE 15
LOGIC RESET 16
S.CLOCK 17
S OUT 18
S IN 19
AUDIO MUTE 20
VIDEO MUTE 21
POWER LED 22
POWER ON 23
W/L RMT 24
PF DET 25
CN Vss 26
RESET 27
5MHz X IN 28
X OUT 29
32KHz Xc IN 30
Xc OUT 31
Vss 32
a
b
c
d
e
f
g
h
i
j
k
l
m
V-880 MC
MESECAM
PAL
VIDEO SYSTEM
VIDEO SYSTEM
VIDEO SYSTEM PAL /MESECAM
V-880MS
IN 1
TEST
TAPE
COUNTER
TRACKING (+) V LOCK(+) SEARCH SET(+)
TRACKING (-) V LOCK(-) AFT SET(-)
PICTURE SHARP FINE(+) SHIFT(+)
PICTURE SOFT FINE(-) SHIFT(-)
NTSC 3.58/4.43
NTSC
SECAM
SECAM
IN 2
DTR BAND
CH DOWN
PRESET
REC
STOP
REW/REV
IN 3
CLEAR
CH UP
CLOCK SET
DT
FF/CUE
SP /LP,EP
IN 4
ON /STANDBY
TIMER
CFM SKIP
PGM
PAUSE /STILL
PLAY
EJECT

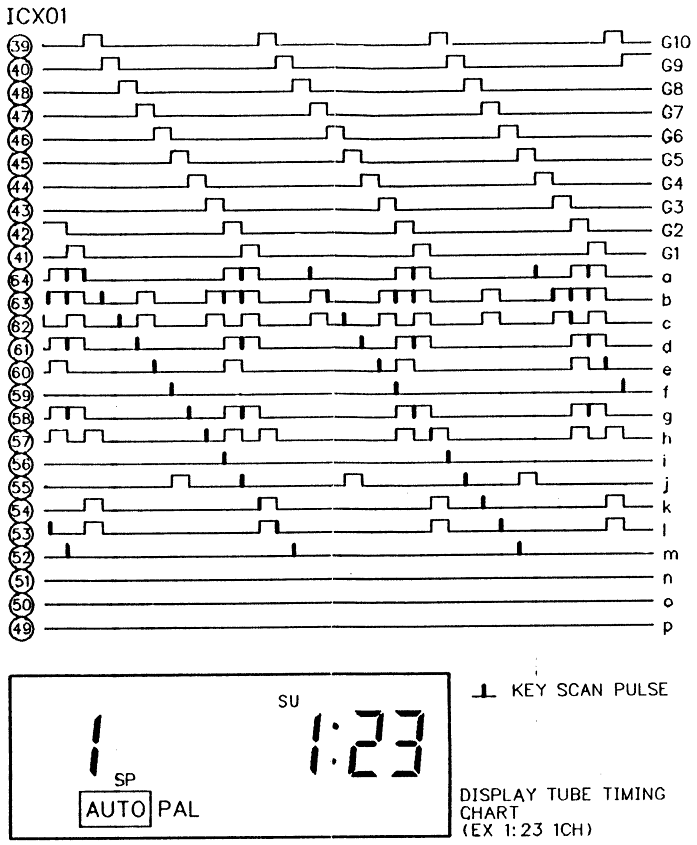
Timer Display

GX01 10-MT-35GK

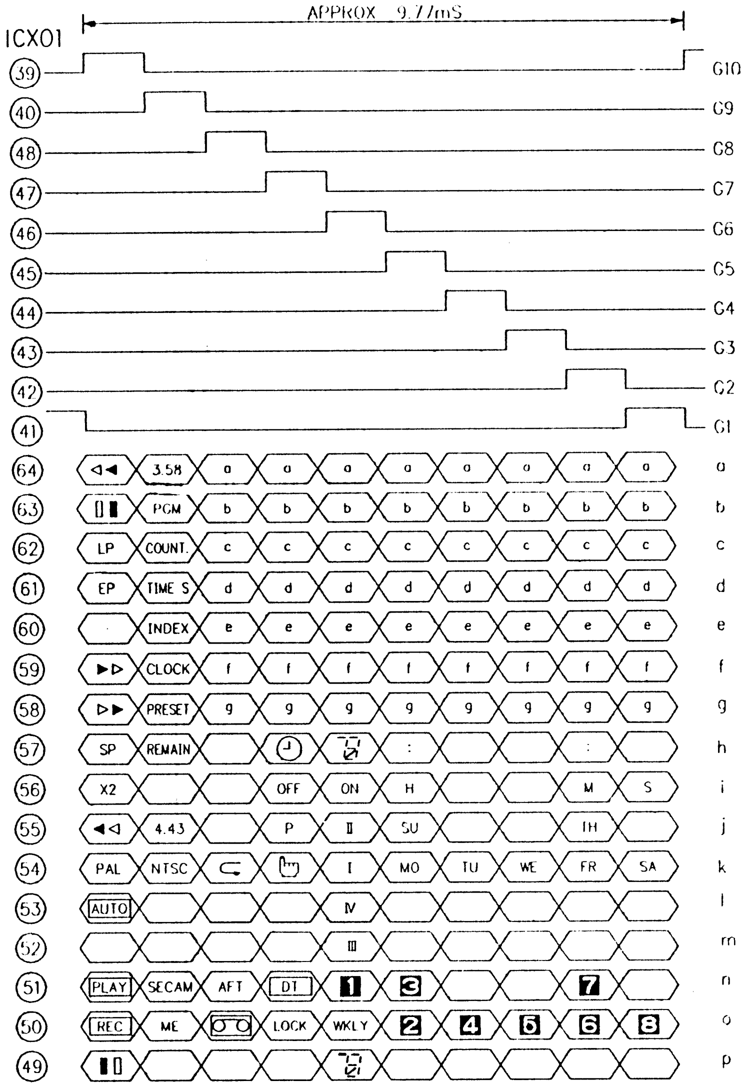

8G
7G
6G
5G
4G
3G
2G
1G
AFT
LOCK
DT
WKLY
SU
MO
TU
WE
TH
FR
SA
ON
OFF
X2
SP
LP
EP
REMAIN
COUNT.
INDEX
TIME S.
PGM
CLOCK
PRESET
3.58
4.43
REC
PLAY
AUTO
PAL
MESECAM
NTSC
10G
9G

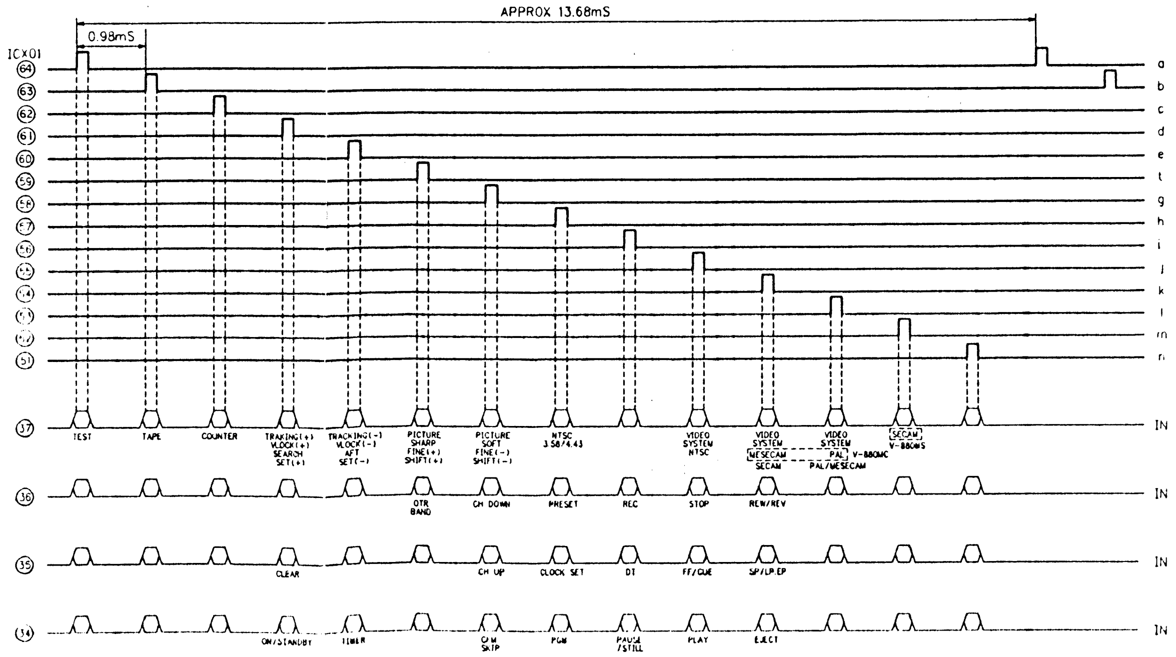
Timer Display Pattern

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	◁◀	3.58	a	a	a	a	a	a	a	a
b	▯▮	PGM	b	b	b	b	b	b	b	b
c	LP	COUNT.	c	c	c	c	c	c	c	c
d	EP	TIME S.	d	d	d	d	d	d	d	d
e	·	INDEX	e	e	e	e	e	e	e	e
f	▶▷	CLOCK	f	f	f	f	f	f	f	f
g	▷▶	PRESET	g	g	g	g	g	g	g	g
h	SP	REMAIN		◷	7̸	:			:	
i	X2			OFF	ON	H			M	S
j	◀◁	4.43		P	II	SU			TH	
k	PAL	NTSC	↻	☝	I	MO	TU	WE	FR	SA
l	AUTO				IV					
m					III					
n	PLAY	SECAM	AFT	DT	❶	❸			❼	
o	REC	ME	⊙⊙	LOCK	WKLY	❷	❹	❺	❻	❽
p	▮▯				7̸					

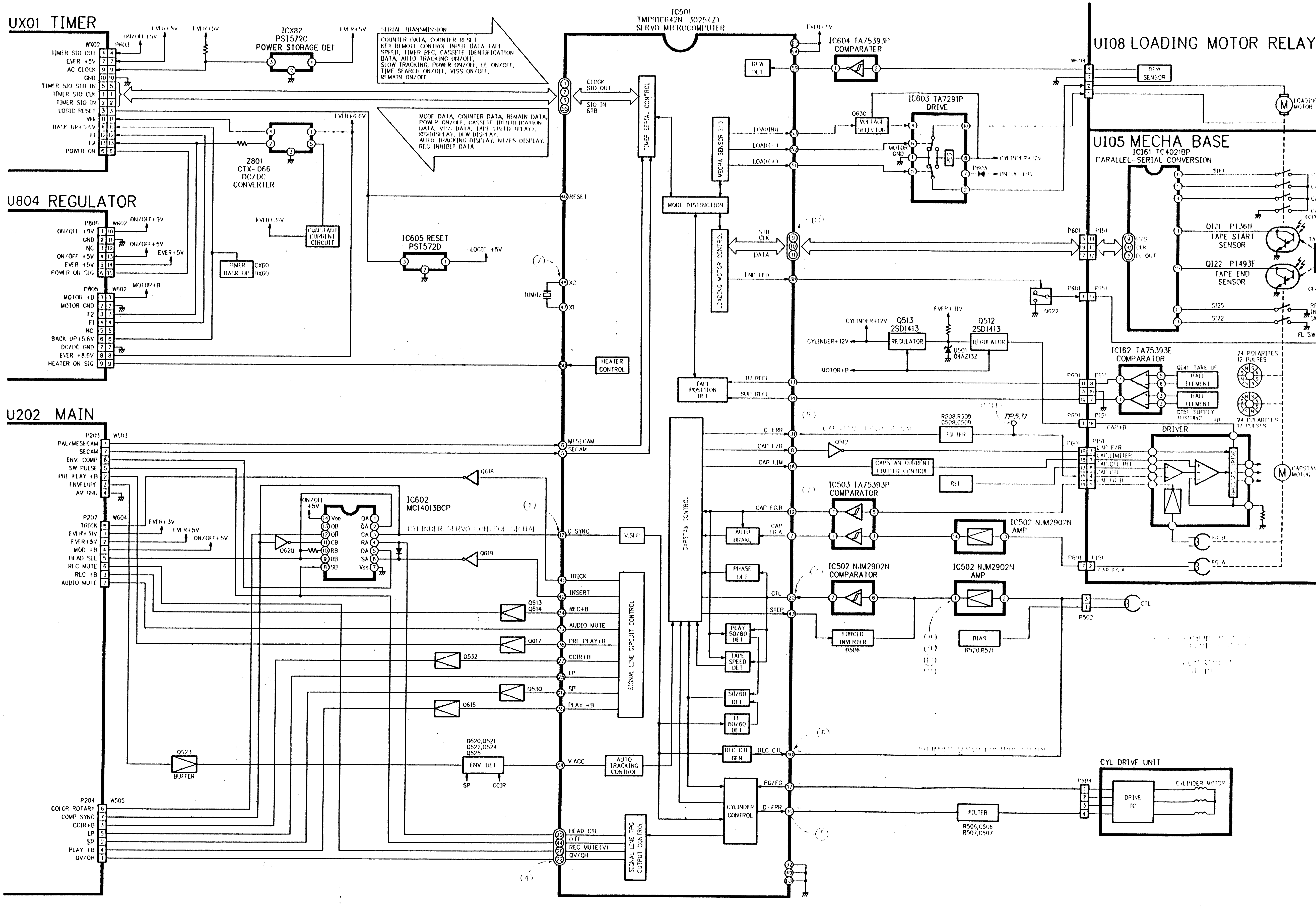


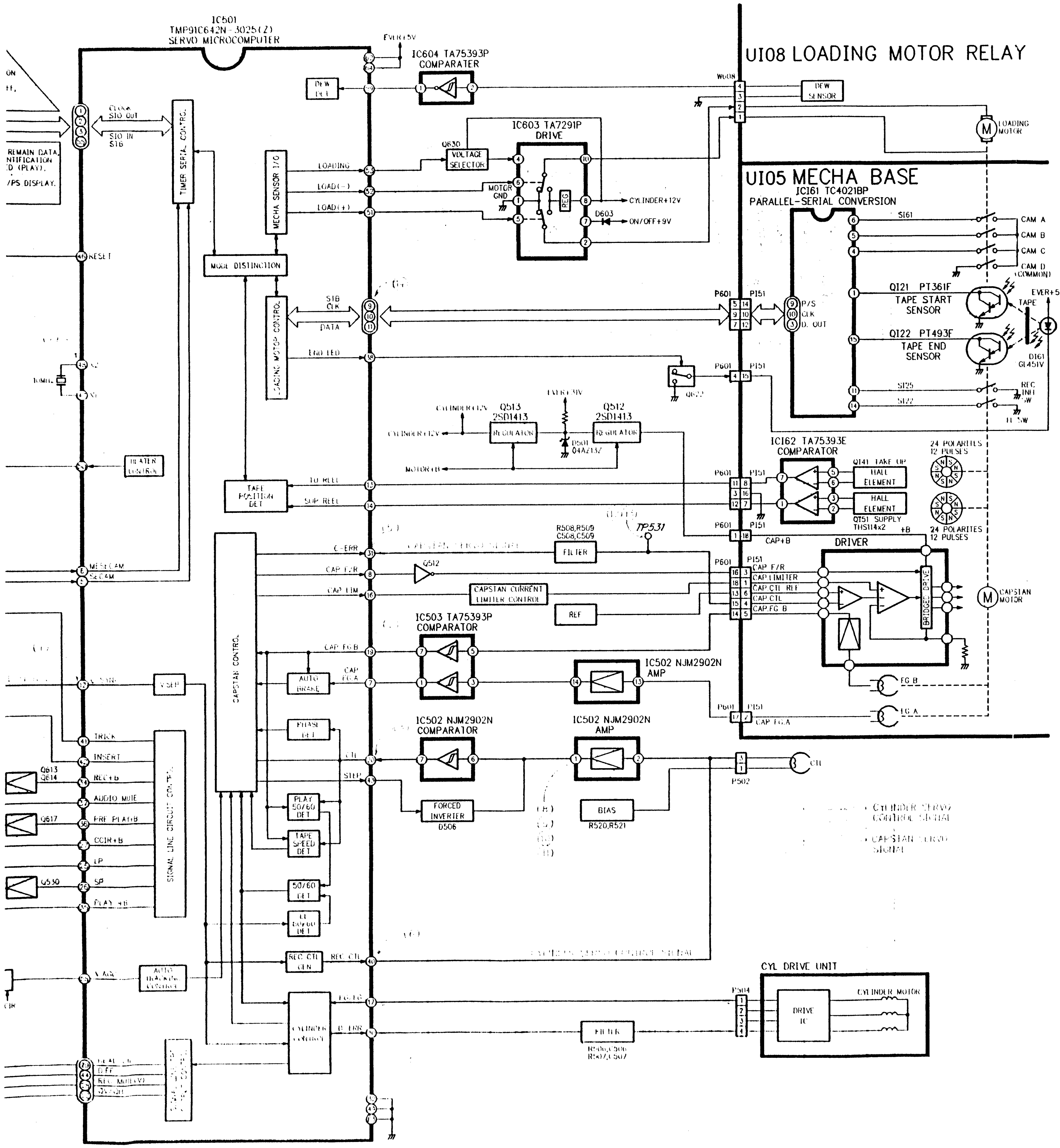
DISPLAY TUBE TIMING CHART
(EX 1:23 1CH)



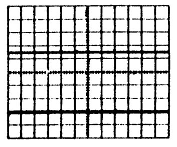


7-4. Logic/Servo Block Diagram


UX01 TIMER
U804 REGULATOR
U202 MAIN
IC501
TMP91C642N 3025(Z)
SERVO MICROCOMPUTER
ICX82
PST572C
POWER STORAGE DET
Z801
CTX-066
DC/DC
CONVERTER
CONSTANT CURRENT CIRCUIT
TIMER BACK UP
IC605 RESET
PST572D
SERIAL TRANSMISSION
TIMER SERIAL CONTROL
MODE DISTINCTION
MECHA SENSOR
LOADING MOTOR CONTROL
TAPE POSITION DET
HEATER CONTROL
CAPSTAN CONTROL
SIGNAL LINE CIRCUIT CONTROL
SIGNAL LINE TPG OUTPUT CONTROL
AUTO TRACKING CONTROL
CYLINDER CONTROL
IC602
MC14013BCP
CYLINDER SERVO CONTROL SIGNAL
ENV DET
BUFFER
Q523
V.SEP
IC604 TA75393P
COMPARATER
DEW DET
IC603 TA7291P
DRIVE
VOLTAGE SELECTOR
UI08 LOADING MOTOR RELAY
LOADING MOTOR
DEW SENSOR
UI05 MECHA BASE
IC161 TC4021BP
PARALLEL-SERIAL CONVERSION
Q121 PT361F
TAPE START SENSOR
Q122 PT493F
TAPE END SENSOR
Q513 2SD1413
Q512 2SD1413
REGULATOR
IC162 TA75393E
COMPARATOR
HALL ELEMENT
24 POLARITIES 12 PULSES
DRIVER
CAPSTAN MOTOR
FILTER
CAPSTAN CURRENT LIMITER CONTROL
IC503 TA75393P
COMPARATOR
IC502 NJM2902N
AMP
IC502 NJM2902N
COMPARATOR
AUTO BRAKE
PHASE DET
PLAY 50/60 DET
TAPE SPEED DET
50/60 DET
EE 50/60 DET
REC CTL GEN
FORCED INVERTER
BIAS
CTL
CYL DRIVE UNIT
DRIVE IC
CYLINDER MOTOR
P502
P504

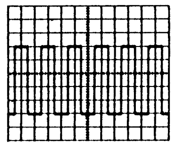

IC501
TMP91C642N-3025(Z)
SERVO MICROCOMPUTER
EVER+5V
IC604 TA75393P
COMPARATER
DEW DET
CLOCK
SIO OUT
SIO IN
STB
REMAIN DATA,
NTIFICATION
D (PLAY),
/PS DISPLAY.
TIMER SERIAL CONTROL
MECHA SENSOR I/O
LOADING
LOAD(−)
LOAD(+)
Q630
VOLTAGE SELECTOR
IC603 TA7291P
DRIVE
MOTOR GND
REG
CYLINDER+12V
D603
ON/OFF+9V
RESET
MODE DISTINCTION
STB
CLK
DATA
LOADING MOTOR CONTROL
END LED
10MHz
HEATER CONTROL
CYLINDER+12V
Q513
2SD1413
REGULATOR
Q512
2SD1413
REGULATOR
D501
04AZ13Z
MOTOR+B
TAPE POSITION DET
TU REEL
SUP REEL
UI08 LOADING MOTOR RELAY
W608
DEW SENSOR
LOADING MOTOR
UI05 MECHA BASE
IC161 TC4021BP
PARALLEL-SERIAL CONVERSION
S161
CAM A
CAM B
CAM C
CAM D (COMMON)
P601
P151
P/S
CLK
D. OUT
Q121 PT361F
TAPE START SENSOR
Q122 PT493F
TAPE END SENSOR
EVER+5V
TAPE
D161
GL451V
Q622
S125
S122
REC INH SW
TE SW
IC162 TA75393E
COMPARATOR
Q141 TAKE UP
HALL ELEMENT
HALL ELEMENT
Q151 SUPPLY
THS114x2
24 POLARITES
12 PULSES
+B
CAP+B
DRIVER
CAP F/R
CAP LIMITER
CAP CTL REF
CAP CTL
CAP FG B
BRIDGED DRIVE
CAPSTAN MOTOR
FG B
FG A
CAP FG A
TP531
R508,R509
C508,C509
FILTER
C-ERR
CAP F/R
Q512
CAP LIM
CAPSTAN CURRENT LIMITER CONTROL
REF
MESECAM
SECAM
CAPSTAN CONTROL
CAP FG B
IC503 TA75393P
COMPARATOR
AUTO BRAKE
CAP FG A
IC502 NJM2902N
AMP
V-SYNC
V SEP
TRICK
INSERT
REC+B
AUDIO MUTE
PRE PLAY+B
CCIR+B
LP
SP
PLAY +B
Q613
Q614
Q617
Q530
SIGNAL LINE CIRCUIT CONTROL
PHASE DET
CTL
STEP
IC502 NJM2902N
COMPARATOR
IC502 NJM2902N
AMP
FORCED INVERTER
D506
BIAS
R520,R521
P502
PLAY 50/60 DET
TAPE SPEED DET
50/60 DET
50/60 DET
CYLINDER SERVO CONTROL SIGNAL
CAPSTAN SERVO SIGNAL
REC CTL GEN
REC CTL
V AGC
AUTO TRACKING CONTROL
CYLINDER CONTROL
FG PG
D ERR
FILTER
R506,C506
R507,C507
CYL DRIVE UNIT
P504
DRIVE IC
CYLINDER MOTOR
REC MUTE(V)

① IC501,Pin ⑫



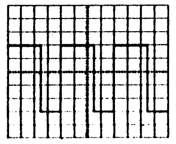
REC
V: 1V/div
H: 5ms/div
4.5Vp–p

② IC501,Pin ⑲



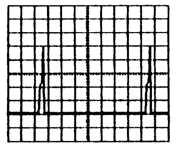
PLAY
V: 1V/div
H: 0.5ms/div
5Vp–p

③ IC501,Pin ⑳



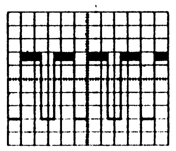
V: 1V/div
H: 10ms/div
5Vp–p

④ IC501,Pin ㉒



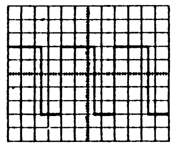
STILL
V: 1V/div
H: 2ms/div
5Vp–p

⑤ IC501,Pin ㉚㉛



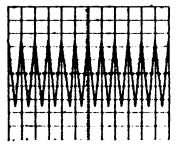
PLAY
V: 1V/div
H: 10µs/div
5Vp–p

⑥ IC501,Pin ㊵



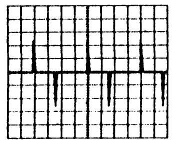
V: 1V/div
H: 10ms/div
5Vp–p

⑦ IC501,Pin ㊽



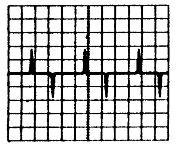
V: 1V/div
H: 0.1µs/div
[10MHz]

⑧ IC502,Pin ①



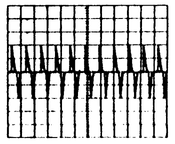
PLAY
PAL/SECAM
SP
V: 0.5V/div
H: 10ms/div
[25Hz]

⑨ IC502,Pin ①



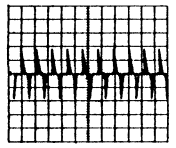
PLAY
PAL/SECAM
LP
V: 0.5V/div
H: 10ms/div
[25Hz]

⑩ IC502,Pin ①



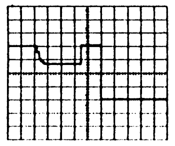
CUEx7
PAL/SECAM
SP
V: 1.0V/div
H: 5ms/div

⑪ IC502,Pin ①



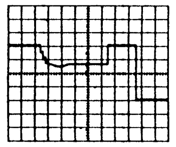
CUEx7
PAL/SECAM
LP
V: 1.0V/div
H: 5ms/div

⑫ TP531

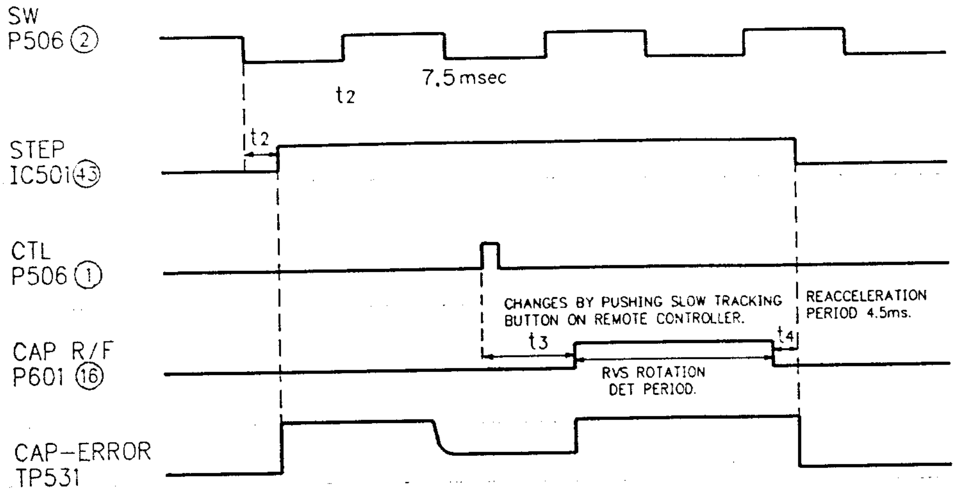


SLOW
PAL/SECAM
SP
V: 1.0V/div
H: 10ms/div

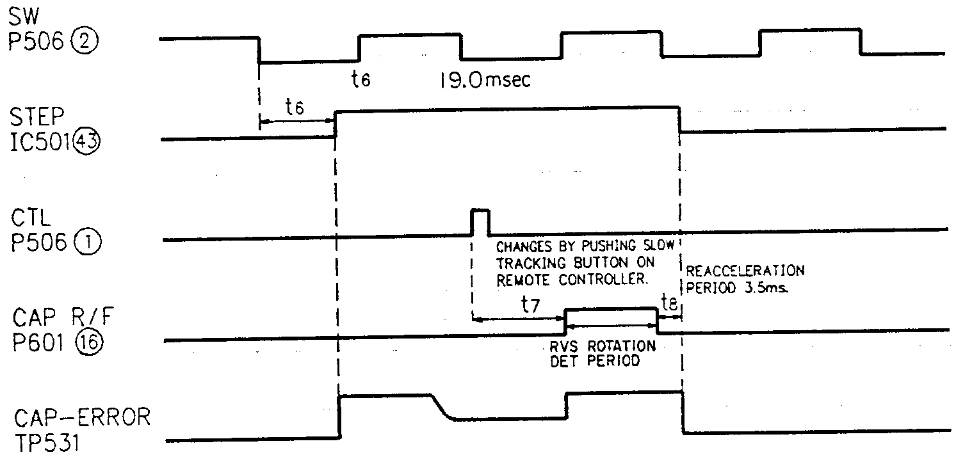
⑬ TP531



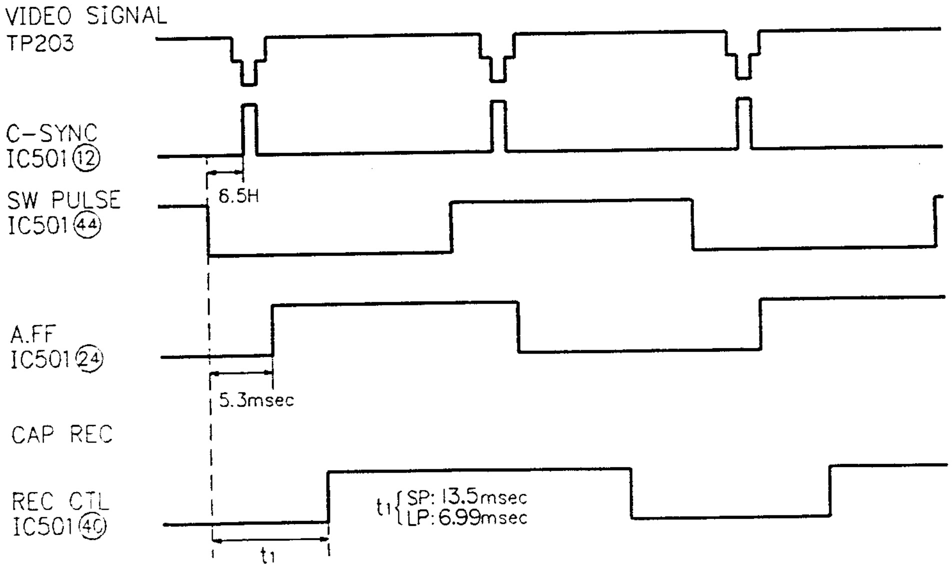
SLOW
PAL/SECAM
LP
V: 1V/div
H: 10ms/div


SW
P506 ②
7.5msec
t2
t2
STEP
IC501㊸
CTL
P506 ①
CHANGES BY PUSHING SLOW TRACKING BUTTON ON REMOTE CONTROLLER.
REACCELERATION PERIOD 4.5ms.
t3
t4
CAP R/F
P601 ⑯
RVS ROTATION DET PERIOD.
CAP-ERROR
TP531

Slow Timing Chart (CCIR SP)


SW
P506 ②
t6
19.0msec
t6
STEP
IC501㊸
CTL
P506 ①
CHANGES BY PUSHING SLOW TRACKING BUTTON ON REMOTE CONTROLLER.
REACCELERATION PERIOD 3.5ms.
t7
t8
CAP R/F
P601 ⑯
RVS ROTATION DET PERIOD
CAP-ERROR
TP531

Slow Timing Chart (CCIR LP)


VIDEO SIGNAL
TP203
C-SYNC
IC501 ⑫
6.5H
SW PULSE
IC501 ㊹
A.FF
IC501 ㉔
5.3msec
CAP REC
REC CTL
IC501 ㊵
t1 { SP: 13.5msec
LP: 6.99msec
t1

Servo Timing Chart (CCIR)

Logic Mode Shift Table

SW INPUT CURRENT MODE	EJECT	STOP	F F	REW	PLAY	×2	PAUSE /STILL	SLOW 1/6	SLOW 1/12	REC		TIMER REC	TAPE RETURN	TIME SEARCH		POWER
SLOT IN	○	○	△	△	△	△	×	×	×	×		×	—	—		POWER OFF
SLOT OUT	—	×	×	×	×	×	×	×	×	×		×	×	×		POWER OFF
STOP /STANDBY	○	—	○	○	○	○	×	×	×	○		○	○	○		POWER OFF
FF	○	○	CUE *	○	○	○	×	×	×	×		○	×	×		POWER OFF
REW	○	○	○	REVIEW *	○	○	×	×	×	×		○	×	×		POWER OFF
CUE	○	○	○	REVIEW *	○	○	×	×	×	×		○	×	×		POWER OFF
REVIEW	○	○	CUE *	○	○	○	×	×	×	×		○	×	×		POWER OFF
PLAY	○	○	CUE *	REVIEW *	—	○	STILL	○	○	×		○	×	○		POWER OFF
STILL	○	○	CUE *	REVIEW *	○ NOTE 1	○	PLAY	○	○	REC PAUSE		○	×	×		POWER OFF
SLOW 1/6	○	○	CUE *	REVIEW *	○	○	STILL	—	○	×		○	×	×		POWER OFF
SLOW 1/12	○	○	CUE *	REVIEW *	○	○	STILL	○	—	×		○	×	×		POWER OFF
×2	○	○	CUE *	REVIEW *	○	—	STILL	○	○	×		○	×	×		POWER OFF
REC	×	○	×	×	×	×	REC PAUSE	×	×	—		○	×	×		POWER OFF
REC PAUSE	×	○	×	×	×	×	REC	×	×	×		○	×	×		POWER OFF
TIMER REC	×	×	×	×	×	×	×	×	×	×		POWER OFF	×	×		POWER ON
POWER OFF	×	×	×	×	×	×	×	×	×	×		○	×	×		POWER ON

NOTE 1 : FLAME (1/25 SLOW MODE WHEN BUTTON IS KEPT PUSHING)

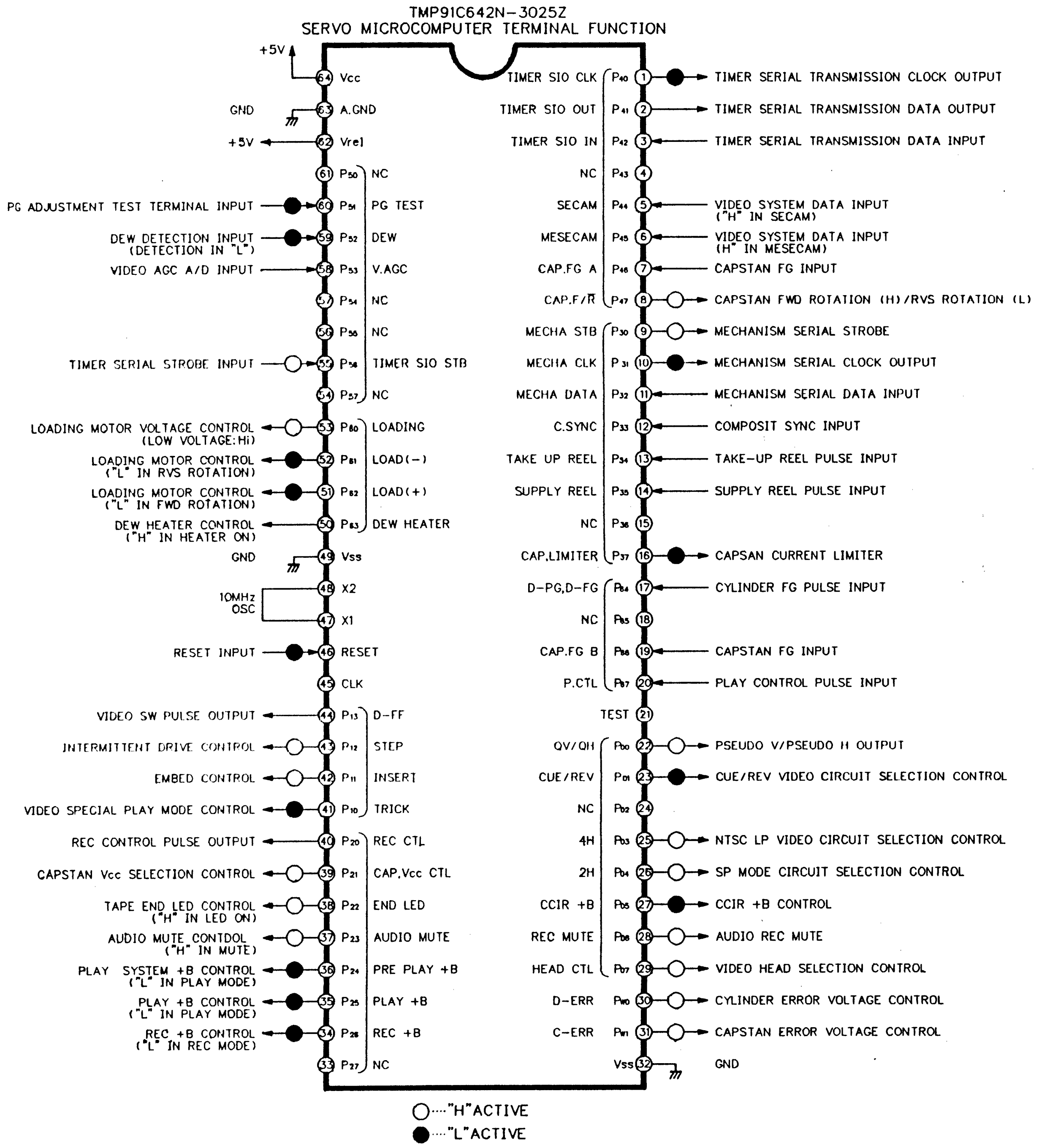
○ · · · SHIFTS TO INPUT MODE DIRECTORY.

△ · · · SHIFTS TO INPUT MODE AFTER SLOT IN IS COMPLETED.

× · · · NO SHIFT. (SAME MODE)

* · · · PAL : ×7 MODE,
NTSC : ×5 MODE

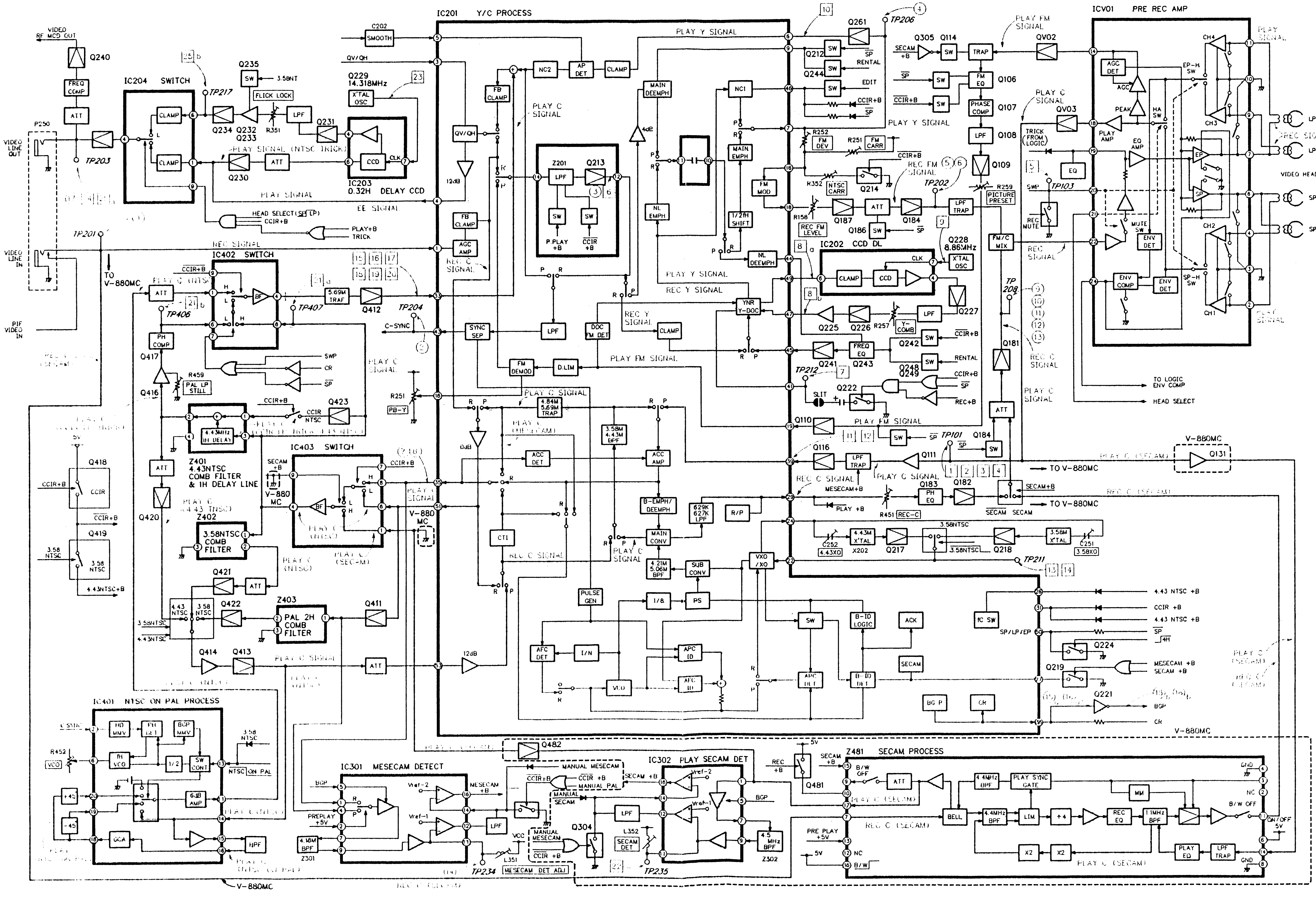
Logic/Servo Microcomputer Terminal Function


TMP91C642N-3025Z
SERVO MICROCOMPUTER TERMINAL FUNCTION
+5V
64 Vcc
GND 63 A.GND
+5V 62 Vref
61 P50 NC
PG ADJUSTMENT TEST TERMINAL INPUT 60 P51 PG TEST
DEW DETECTION INPUT (DETECTION IN "L") 59 P52 DEW
VIDEO AGC A/D INPUT 58 P53 V.AGC
57 P54 NC
56 P55 NC
TIMER SERIAL STROBE INPUT 55 P56 TIMER SIO STB
54 P57 NC
LOADING MOTOR VOLTAGE CONTROL (LOW VOLTAGE:Hi) 53 P80 LOADING
LOADING MOTOR CONTROL ("L" IN RVS ROTATION) 52 P81 LOAD(−)
LOADING MOTOR CONTROL ("L" IN FWD ROTATION) 51 P82 LOAD(+)
DEW HEATER CONTROL ("H" IN HEATER ON) 50 P83 DEW HEATER
GND 49 Vss
10MHz OSC 48 X2
47 X1
RESET INPUT 46 RESET
45 CLK
VIDEO SW PULSE OUTPUT 44 P13 D-FF
INTERMITTENT DRIVE CONTROL 43 P12 STEP
EMBED CONTROL 42 P11 INSERT
VIDEO SPECIAL PLAY MODE CONTROL 41 P10 TRICK
REC CONTROL PULSE OUTPUT 40 P20 REC CTL
CAPSTAN Vcc SELECTION CONTROL 39 P21 CAP.Vcc CTL
TAPE END LED CONTROL ("H" IN LED ON) 38 P22 END LED
AUDIO MUTE CONTDOL ("H" IN MUTE) 37 P23 AUDIO MUTE
PLAY SYSTEM +B CONTROL ("L" IN PLAY MODE) 36 P24 PRE PLAY +B
PLAY +B CONTROL ("L" IN PLAY MODE) 35 P25 PLAY +B
REC +B CONTROL ("L" IN REC MODE) 34 P26 REC +B
33 P27 NC
TIMER SIO CLK P40 1 TIMER SERIAL TRANSMISSION CLOCK OUTPUT
TIMER SIO OUT P41 2 TIMER SERIAL TRANSMISSION DATA OUTPUT
TIMER SIO IN P42 3 TIMER SERIAL TRANSMISSION DATA INPUT
NC P43 4
SECAM P44 5 VIDEO SYSTEM DATA INPUT ("H" IN SECAM)
MESECAM P45 6 VIDEO SYSTEM DATA INPUT ("H" IN MESECAM)
CAP.FG A P46 7 CAPSTAN FG INPUT
CAP.F/R̄ P47 8 CAPSTAN FWD ROTATION (H)/RVS ROTATION (L)
MECHA STB P30 9 MECHANISM SERIAL STROBE
MECHA CLK P31 10 MECHANISM SERIAL CLOCK OUTPUT
MECHA DATA P32 11 MECHANISM SERIAL DATA INPUT
C.SYNC P33 12 COMPOSIT SYNC INPUT
TAKE UP REEL P34 13 TAKE-UP REEL PULSE INPUT
SUPPLY REEL P35 14 SUPPLY REEL PULSE INPUT
NC P36 15
CAP.LIMITER P37 16 CAPSAN CURRENT LIMITER
D-PG,D-FG P84 17 CYLINDER FG PULSE INPUT
NC P85 18
CAP.FG B P86 19 CAPSTAN FG INPUT
P.CTL P87 20 PLAY CONTROL PULSE INPUT
TEST 21
QV/QH P00 22 PSEUDO V/PSEUDO H OUTPUT
CUE/REV P01 23 CUE/REV VIDEO CIRCUIT SELECTION CONTROL
NC P02 24
4H P03 25 NTSC LP VIDEO CIRCUIT SELECTION CONTROL
2H P04 26 SP MODE CIRCUIT SELECTION CONTROL
CCIR +B P05 27 CCIR +B CONTROL
REC MUTE P06 28 AUDIO REC MUTE
HEAD CTL P07 29 VIDEO HEAD SELECTION CONTROL
D-ERR P90 30 CYLINDER ERROR VOLTAGE CONTROL
C-ERR P91 31 CAPSTAN ERROR VOLTAGE CONTROL
Vss 32 GND
○····"H"ACTIVE
●····"L"ACTIVE

IC501 TMP91C642-3025 (Z) Output Polarity

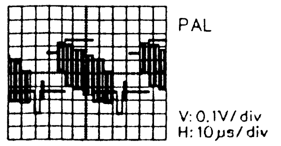
Pin No.	MODE / PORT NAME	ACTIVE	SLOT IN	SLOT OUT	LOADING	UN-LOADING	STOP	STAND-BY	FF	REW	CUE	REW	PLAY	X2	STILL	SLOW	REC	REC PAUSE	NOTE
8	CAP F/R̄	H	H	L	H	L	H	L	H	L	H	L	H	H	H	H	L	L	
16	CAP LIM.	PWM	H	H	PWM	H	PWM	PWM	H	H	H	H	H	H	PWM	PWM	H	H	
22	Qv/QH	H	L	L	L	L	L	L	L	L	_⌐⎍_	_⌐⎍_	L	_⌐⎍_	_⌐⎍_	_⌐⎍_	L	L	
23	$\overline{\text{CUE}}$/REV	L	H	H	H	H	H	H	H	H	L	L	H	H	H	H	H	H	
25	4H	H	L	L	L	L	L	L	L	L	＊1 L/H	＊1 L/H	＊1 L/H	＊1 L/H	＊2 L/H	＊2 L/H	L	L	＊1 "H" in NTSCLP ＊2 Previous mode is kept
26	2H	H	H	H	H	H	H	H	H	H	＊3 H/L	＊3 H/L	＊3 H/L	＊3 H/L	＊2 H/L	＊2 H/L	＊3 H/L	＊3 H/L	＊3 "H" in SP
27	$\overline{\text{CCIR +B}}$	L	＊4 L/H	＊4 L/H	＊4 L/H	＊4 L/H	＊4 L/H	＊4 L/H	＊4 L/H	＊4 L/H	＊4 L/H	＊4 L/H	＊4 L/H	＊4 L/H	＊5 L/H	＊5 L/H	＊4 L/H	＊4 L/H	＊4 "H" in NTSC ＊5 Previous mode is kept except for forced system.
28	REC MUTE	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	
29	HEAD CTL	H	L	L	L	L	L	L	L	L	L	L	＊6 L/H	＊7 _⎍_⌐	＊7 _⎍_⌐	＊7 __⎍_	＊6 L/H	＊6 L/H	＊6 "L" in SP ＊7 Phase of 180° difference from D-FF in SP.
30	CYLINDER-ERR	PWM	L	L	PWM	＊8 PWM	L	PWM	PWM	PWM	PWM	PWM	PWM	PWM	PWM	PWM	PWM	PWM	＊8 "L" in DEW
31	CAP.-ERR	PWM	PWM	PWM	PWM	PWM	L	L	PWM	PWM	PWM	PWM	PWM	PWM	L	L⟩PWM⟨L	PWM	L	
34	$\overline{\text{REC +B}}$	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	L	
35	$\overline{\text{PLAY +B}}$	L	H	H	H	H	H	H	H	H	L	L	L	L	L	L	H	H	
36	$\overline{\text{Pre PLAY +B}}$	L	H	H	H	H	H	H	H	H	L	L	L	L	L	L	H	H	
37	AUDIO MUTE	H	L	L	L	L	L	L	L	L	H	H	L	L	H	H	L	L	
38	T.END LED	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	
40	REC CTL	–	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	⎺⎽⎍⎺	Open	
41	$\overline{\text{TRICK}}$	L	H	H	H	H	H	H	H	H	L	L	H	L	L	L	L	L	
42	INSERT	H	L	L	L	L	L	L	L	L	＊9 L/H	＊9 L/H	L	＊9 L/H	＊10 L/H	L	L	L	＊9 "H"in SP ＊10 "H" only in SP starting
43	STEP	H	L	L	L	L	L	L	L	L	L	L	L	L	＊11 L/H	_⎍_	L	L	＊11 "H" only in starting
44	D-FF	–	L	L	_⎍_⌐	＊12 _⎍_⌐	L	_⎍_⌐	_⎍_⌐	_⎍_⌐	_⎍_⌐	_⎍_⌐	_⎍_⌐	_⎍_⌐	_⎍_⌐	_⎍_⌐	_⎍_⌐	_⎍_⌐	＊12 "L" in DEW
50	DEW HEATER	H	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	
51	LOAD (+)	L	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	
52	LOAD (−)	L	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	
53	LOADING	H	H	H	H	L	L	L	H	H	H	H	L	L	L	L	L	L	
☒	MECHA POSITION	☒	I	I	IV	IV	＊13 VII	VI	VIII	VIII	VI	V	VI	VI	VI	VI	VI	VI	＊13 II pos in DEW

7-5. Video Block Diagram

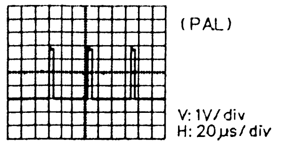

IC201 Y/C PROCESS
ICV01 PRE REC AMP
IC204 SWITCH
IC203 0.32H DELAY CCD
IC202 CCD DL
IC402 SWITCH
IC403 SWITCH
IC401 NTSC ON PAL PROCESS
IC301 MESECAM DETECT
IC302 PLAY SECAM DET
Z481 SECAM PROCESS
Z401 4.43NTSC COMB FILTER & 1H DELAY LINE
Z402 3.58NTSC COMB FILTER
Z403 PAL 2H COMB FILTER
Z201
VIDEO RF MCD OUT
VIDEO LINE OUT
VIDEO LINE IN
PIF VIDEO IN
P250
Q240
TP203
TP201
TP217
TP206
TP202
TP204
TP406
TP407
TP212
TP101
TP103
TP208
TP211
TP234
TP235
Q229 14.318MHz
Q228 8.86MHz
PLAY Y SIGNAL
PLAY C SIGNAL
PLAY FM SIGNAL
REC C SIGNAL
REC Y SIGNAL
REC FM SIGNAL
HEAD SELECT
VIDEO HEAD
LP2/EP2
LP1/EP1
SP2
SP1
TO LOGIC ENV COMP
TO V-880MC
V-880MC
Q131
Q482
Q481
Q304
MESECAM DET ADJ
4.43 NTSC +B
CCIR +B
SECAM +B
MESECAM +B
BGP
CR

PLAY Mode

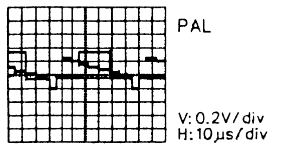
① TP201



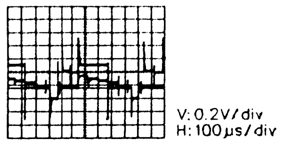
② TP204



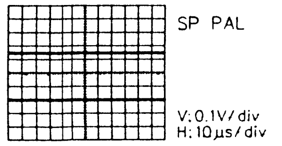
③ Q213,EMITTER



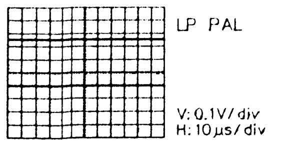
④ TP206



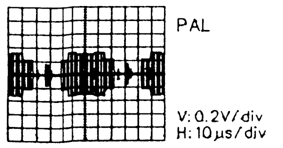
⑤ TP202



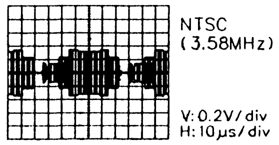
⑥ TP202



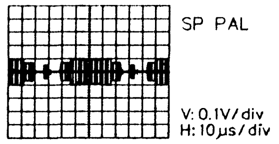
⑦ IC201,Pin㉟



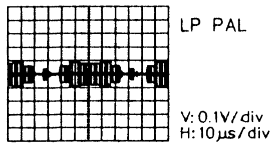
⑧ IC201,Pin㉟



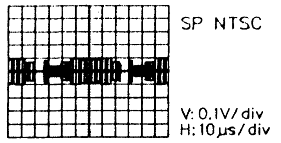
⑨ TP208



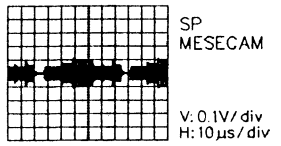
⑩ TP208



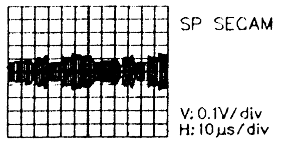
⑪ TP208



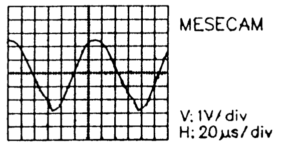
⑫ TP208



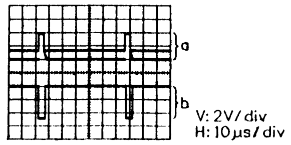
⑬ TP208



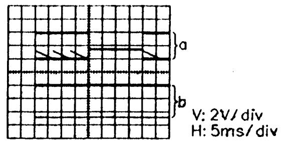
⑭ TP234



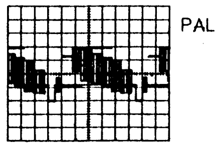
⑮ a: IC201,Pin㉟
b: Q221,COLLECTOR



⑯ a: IC201,Pin㉟
b: Q221,COLLECTOR

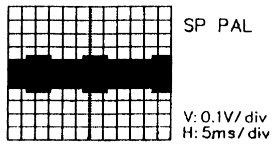


⑰ TP203

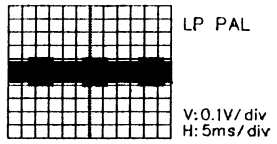


REC Mode

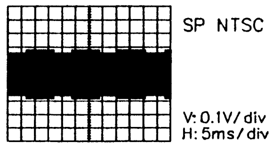
1 TP101



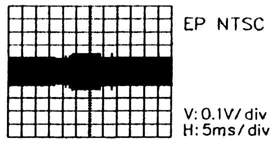
2 TP101



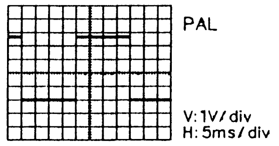
3 TP101



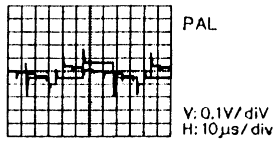
4 TP101



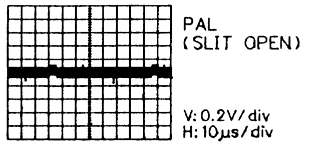
5 TP103



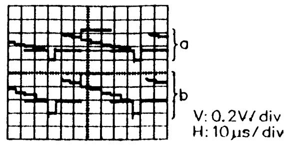
6 Q213,EMITTER



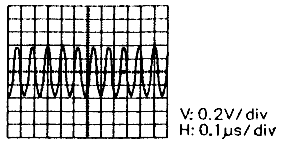
7 TP212



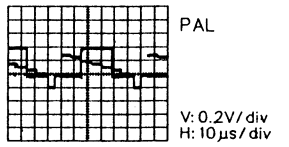
8 a: IC201,Pin㊾
b: IC201,Pin㊼



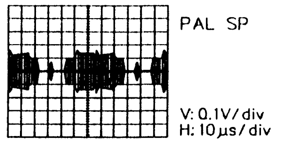
9 Q228,EMITTER



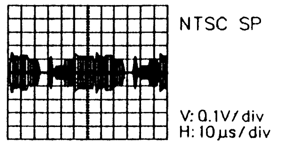
10 IC201,Pin⑥



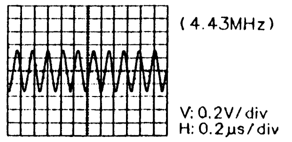
11 IC201,Pin㊴



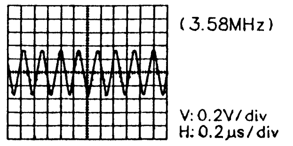
12 IC201,Pin㊴



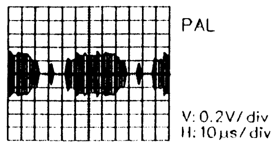
13 TP211



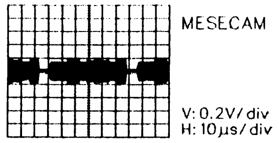
14 TP211



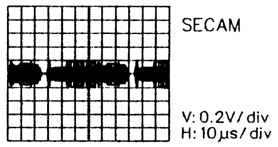
15 Q412,EMITTER



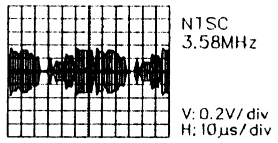
16 Q412,EMITTER



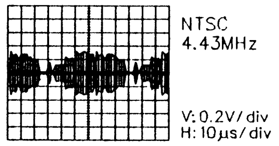
17 Q412,EMITTER



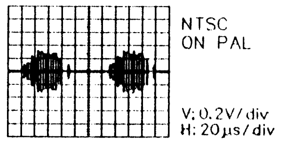
18 Q412,EMITTER



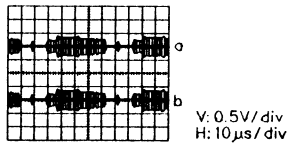
19 Q412,EMITTER



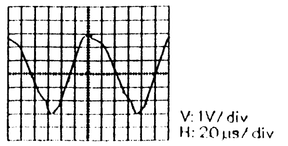
20 Q412,EMITTER



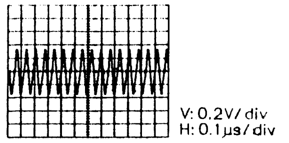
21 a: TP407
b: TP406



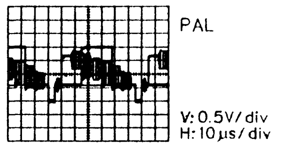
22 TP235



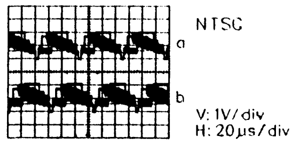
23 Q229,EMITTER



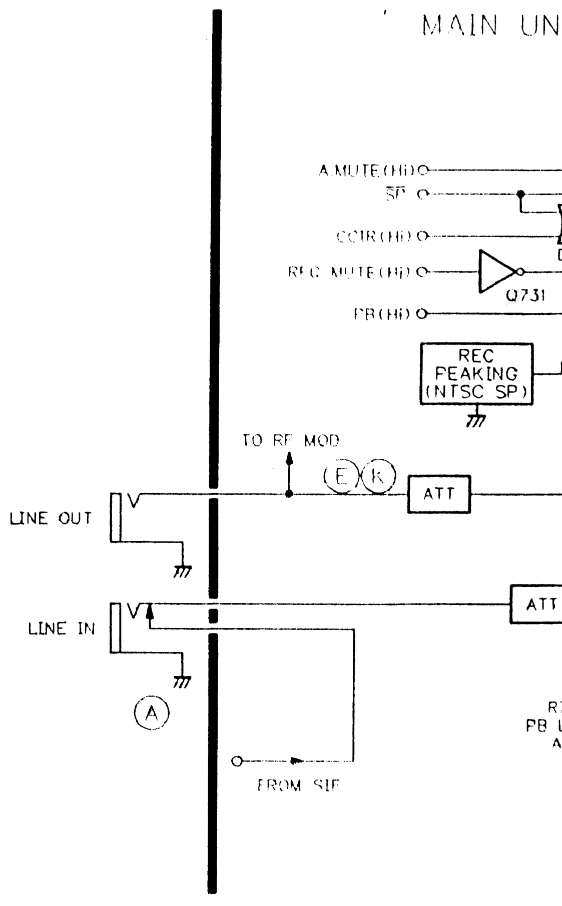
24 TP203



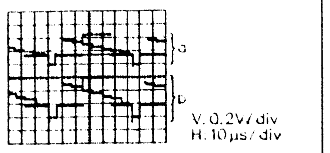
25 a: TP203
b: TP217



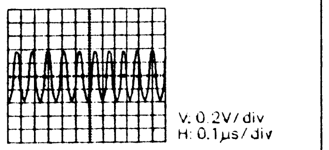
7-6. Audio Block Diagram


MAIN UN
A.MUTE(H)
SP
CCIR(H)
REC MUTE(H)
PB(H)
Q731
REC
PEAKING
(NTSC SP)
TO RF MOD
E
K
ATT
LINE OUT
LINE IN
ATT
A
FROM SIF

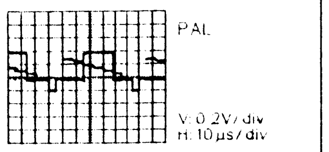
8 a: IC201,Pin ㊾
b: IC201,Pin ㊼



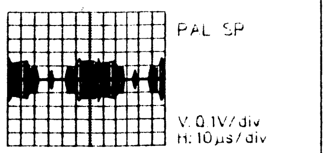
9 Q228,EMITTER



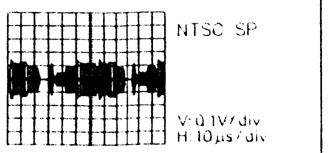
10 IC201,Pin ⑥



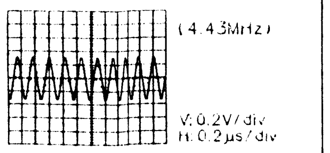
11 IC201,Pin ㊴



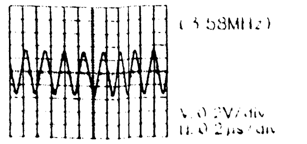
12 IC201,Pin ㊴



13 TP211

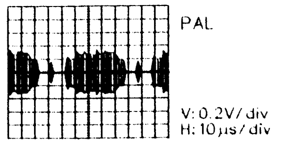


14 TP211

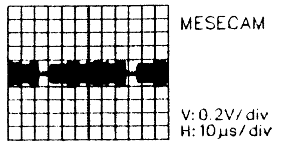


EN)

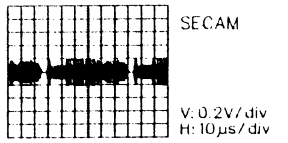
15 Q412,EMITTER



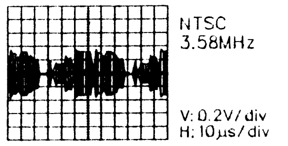
16 Q412,EMITTER



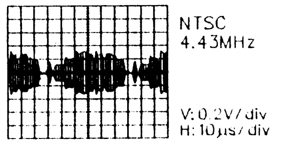
17 Q412,EMITTER



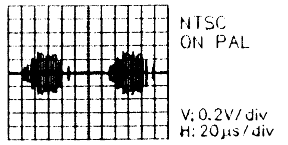
18 Q412,EMITTER



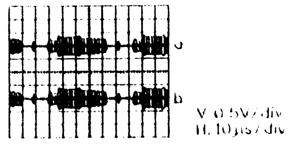
19 Q412,EMITTER



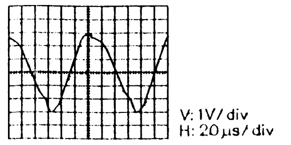
20 Q412,EMITTER



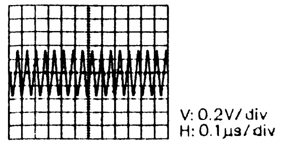
21 a: TP407
b: TP406



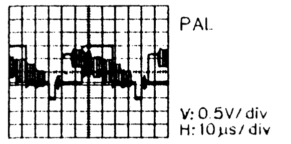
22 TP235



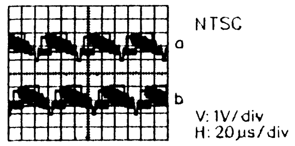
23 Q229,EMITTER



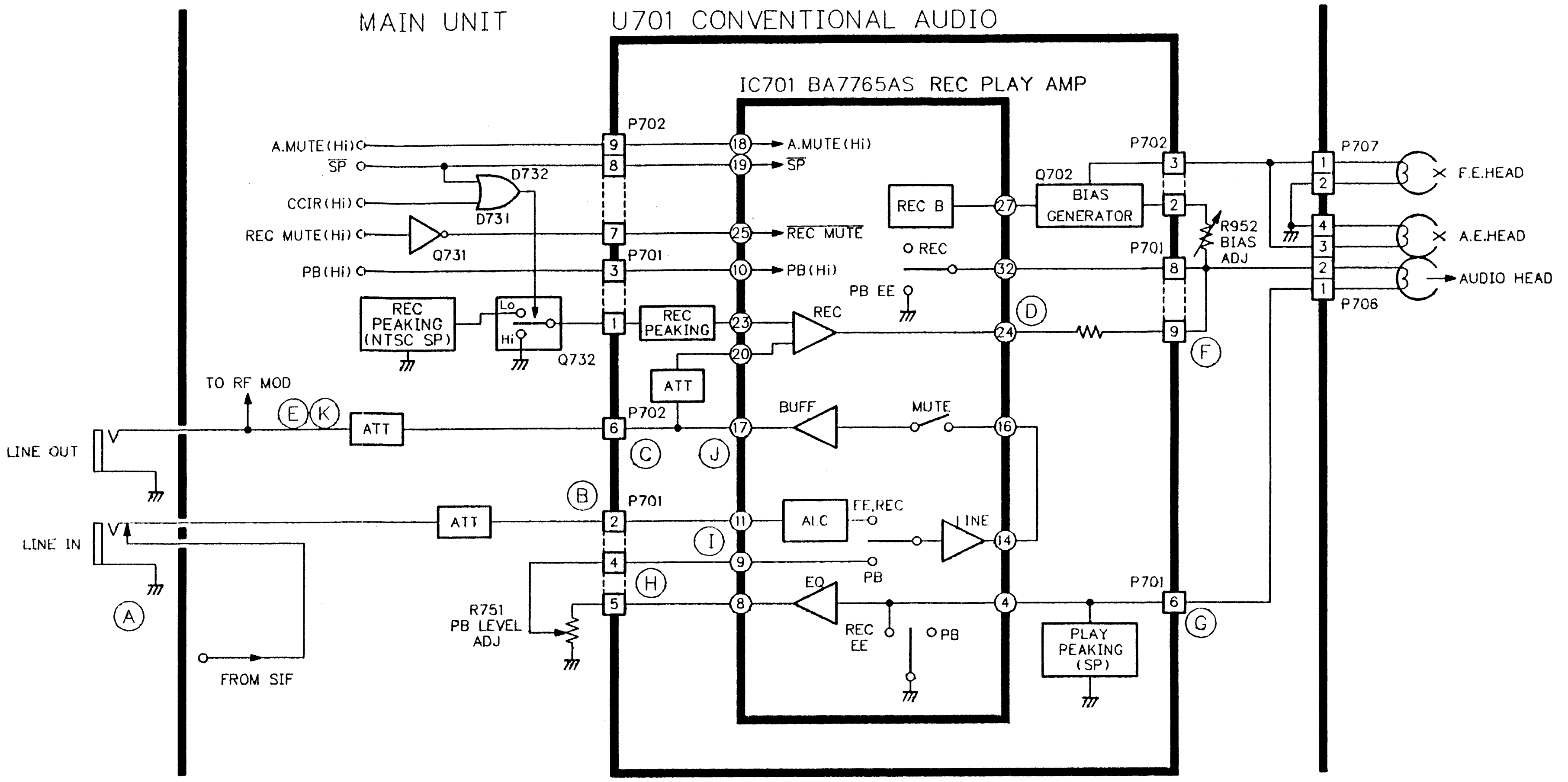
24 TP203

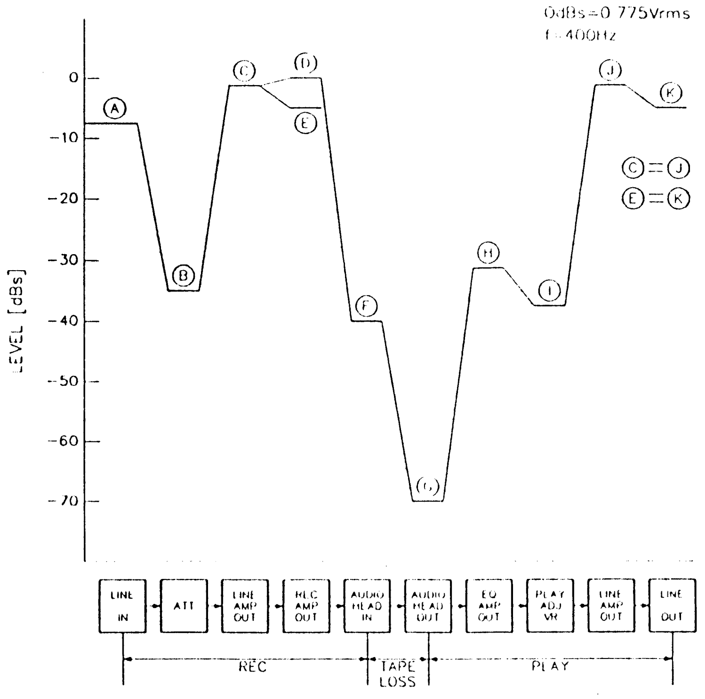


25 a: TP203
b: TP217

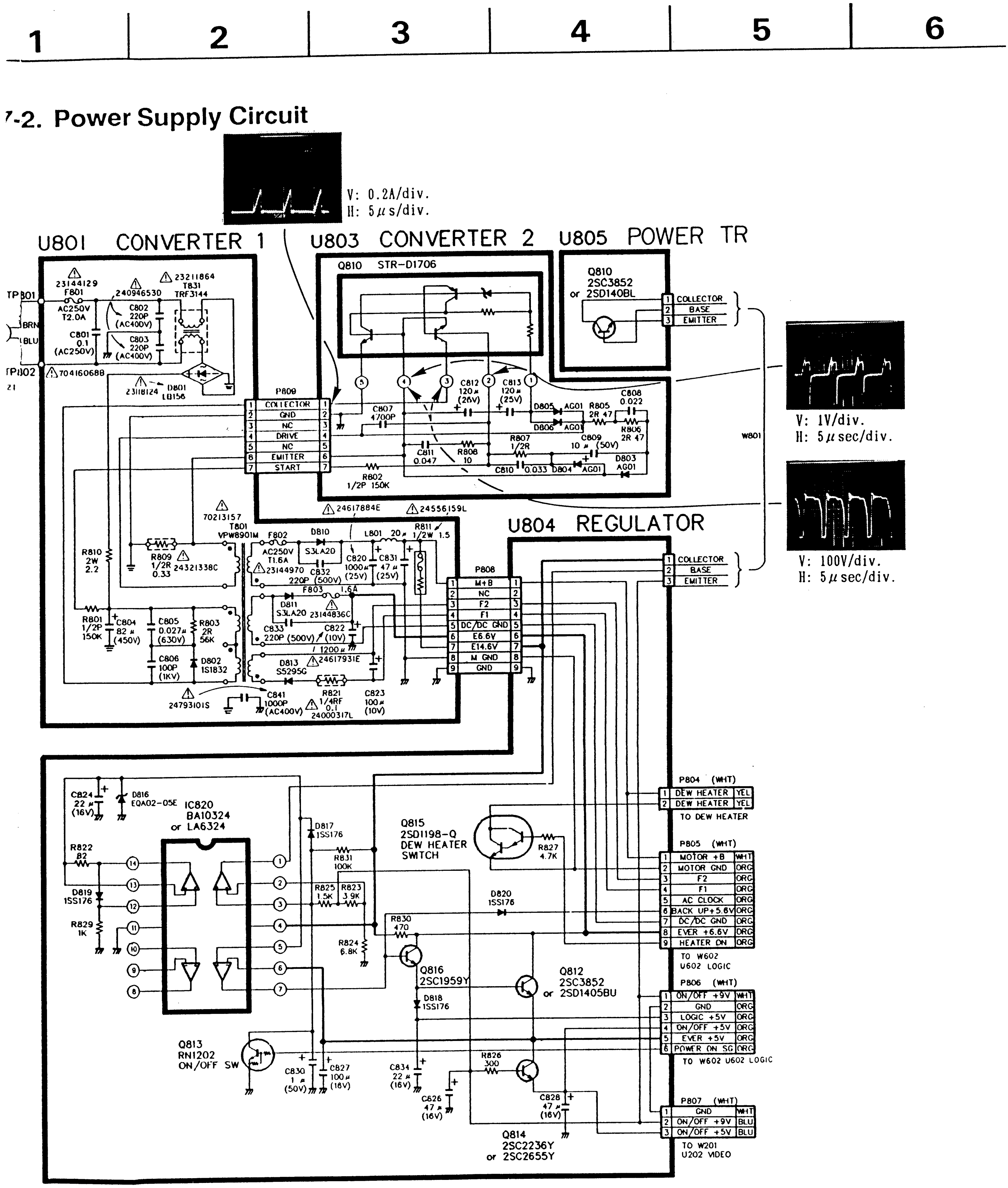


7-6. Audio Block Diagram


MAIN UNIT
U701 CONVENTIONAL AUDIO
IC701 BA7765AS REC PLAY AMP
P702
A.MUTE(Hi)
SP
CCIR(Hi)
REC MUTE(Hi)
PB(Hi)
D732
D731
Q731
REC PEAKING (NTSC SP)
Lo
Hi
Q732
TO RF MOD
E K
ATT
LINE OUT
LINE IN
A
FROM SIF
ATT
B
P701
R751 PB LEVEL ADJ
C
J
H
I
9
8
7
3
1
6
2
4
5
18
19
25
10
23
20
17
11
9
8
A.MUTE(Hi)
SP
REC MUTE
PB(Hi)
REC PEAKING
ATT
REC
PB EE
BUFF
MUTE
ALC
EE,REC
LINE
EQ
PB
REC EE
PB
REC B
O REC
27
32
24
16
14
4
D
Q702
BIAS GENERATOR
P702
P701
3
2
8
9
6
R952 BIAS ADJ
F
G
PLAY PEAKING (SP)
P707
P706
1
2
4
3
2
1
F.E.HEAD
A.E.HEAD
AUDIO HEAD



7-2. Power Supply Circuit



1
2
3
4
5
6
V: 0.2A/div.
H: 5μs/div.
U801 CONVERTER 1
U803 CONVERTER 2
U805 POWER TR
Q810 STR-D1706
Q810 2SC3852 or 2SD140BL
COLLECTOR
BASE
EMITTER
23144129 F801 AC250V T2.0A
240946530
23211864 T831 TRF3144
C802 220P (AC400V)
C803 220P (AC400V)
C801 0.1 (AC250V)
TP801
TP802
BRN
BLU
704160688
23118124 D801 LB156
P809
COLLECTOR
GND
NC
DRIVE
NC
EMITTER
START
C807 4700P
C812 120μ (25V)
C813 120μ (25V)
C808 0.022
D805 AG01
R805 2R 47
D806 AG01
R806 2R 47
R807 1/2R
C809 10μ (50V)
C811 0.047
R808 10
C810 0.033
D804 AG01
D803 AG01
R802 1/2P 150K
V: 1V/div.
H: 5μsec/div.
W801
V: 100V/div.
H: 5μsec/div.
70213157 T801 VPW8901M
24617884E
24556159L
U804 REGULATOR
R810 2W 2.2
R809 1/2R 0.33
24321338C
F802 AC250V T1.6A
23144970
D810 S3LA20
C832 220P (500V)
C820 1000μ (25V)
C831 47μ (25V)
L801 20μ
R811 1/2W 1.5
F803 1.6A
D811 S3LA20
23144836C
C833 220P (500V)
C822 (10V)
1200μ
D813 S5295G
24617931E
R801 1/2P 150K
C804 82μ (450V)
C805 0.027μ (630V)
R803 2R 56K
C806 100P (1KV)
D802 1S1832
24793101S
C841 1000P (AC400V)
R821 1/4RF 0.1
24000317L
C823 100μ (10V)
P808
M+B
NC
F2
F1
DC/DC GND
E6.6V
E14.6V
M GND
GND
C824 22μ (16V)
D816 EQA02-05E
IC820 BA10324 or LA6324
R822 82
D819 1SS176
R829 1K
D817 1SS176
R831 100K
R825 1.5K
R823 3.9K
R824 6.8K
R830 470
Q815 2SD1198-Q DEW HEATER SWITCH
R827 4.7K
D820 1SS176
Q816 2SC1959Y
D818 1SS176
Q812 2SC3852 or 2SD1405BU
Q813 RN1202 ON/OFF SW
C830 1μ (50V)
C827 100μ (16V)
C834 22μ (16V)
C626 47μ (16V)
R826 300
C828 47μ (16V)
Q814 2SC2236Y or 2SC2655Y
P804 (WHT)
DEW HEATER YEL
DEW HEATER YEL
TO DEW HEATER
P805 (WHT)
MOTOR +B WHT
MOTOR GND ORG
F2 ORG
F1 ORG
AC CLOCK ORG
BACK UP+5.6V ORG
DC/DC GND ORG
EVER +6.6V ORG
HEATER ON ORG
TO W602 U602 LOGIC
P806 (WHT)
ON/OFF +9V WHT
GND ORG
LOGIC +5V ORG
ON/OFF +5V ORG
EVER +5V ORG
POWER ON SG ORG
TO W602 U602 LOGIC
P807 (WHT)
GND WHT
ON/OFF +9V BLU
ON/OFF +5V BLU
TO W201 U202 VIDEO

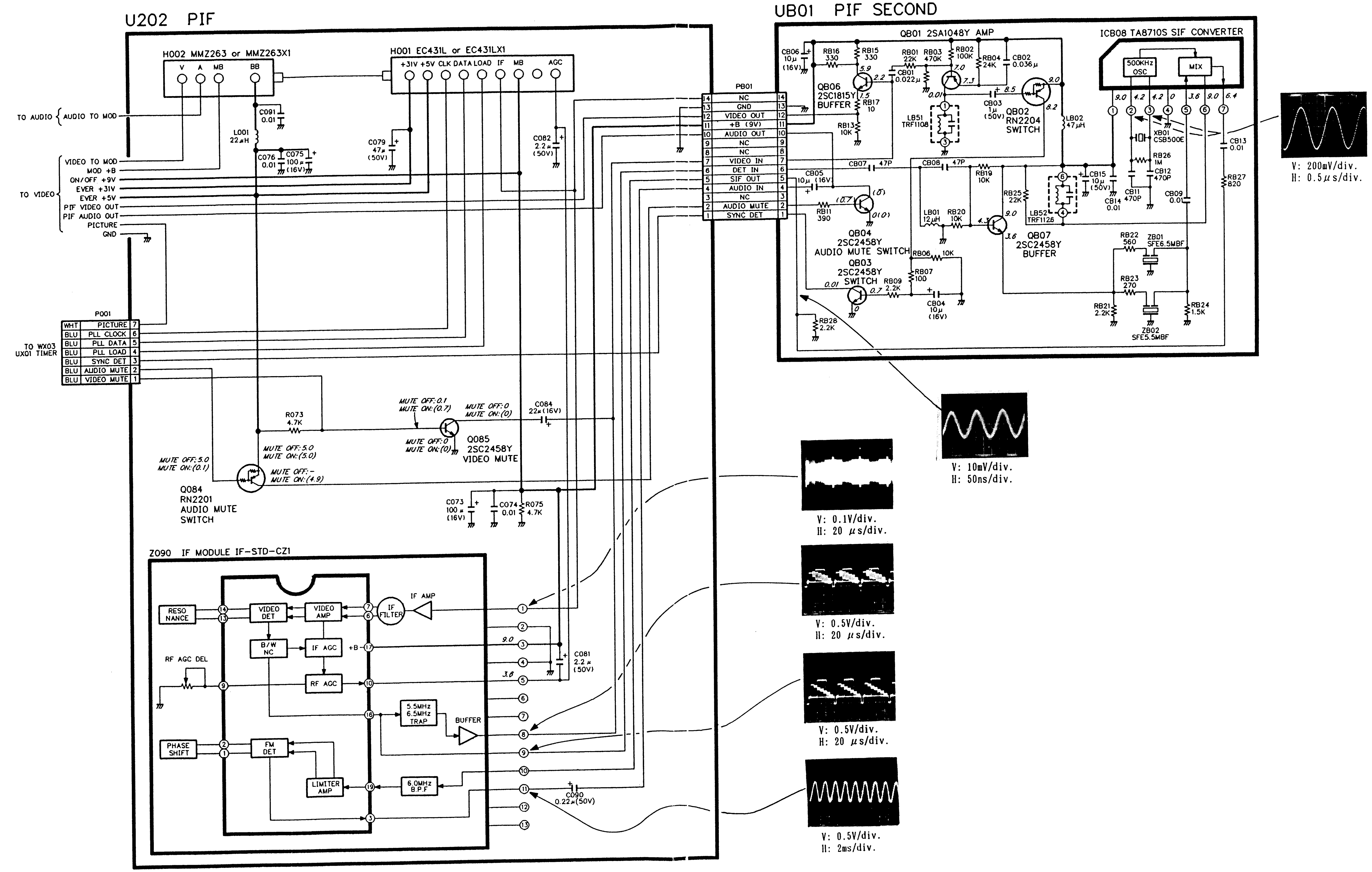
(V)

	IC820													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
POWER OFF	0	0	0	15.6	5.1	5.1	6.4	N.C.	N.C.	N.C.	0	5.1	5.1	5.7
EE	9.7	5.7	5.7	14.9	5.1	5.1	6.4	N.C.	N.C.	N.C.	0	5.1	5.1	5.7
REC	9.7	5.7	5.7	14.2	5.1	5.1	6.4	N.C.	N.C.	N.C.	0	5.1	5.1	5.7

(V)

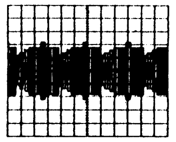
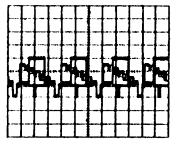
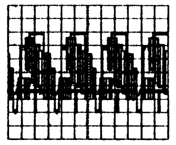
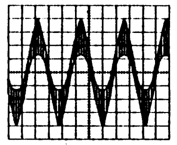
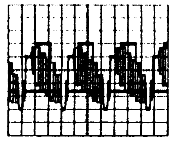
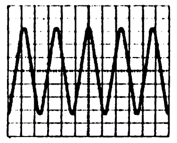
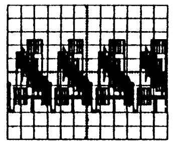
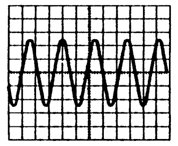
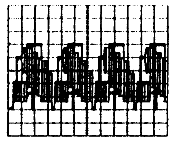
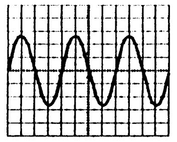
	Q810			Q812			Q813			Q814			Q815			Q816			D818	D820
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	K	K
POWER OFF	0	15.7	0	5.1	6.9	5.7	0	0	2.8	0	5.1	0	0	0.7	1.4	5.7	6.6	6.4	5.1	5.6
EE	9.0	14.9	9.7	5.1	6.6	5.7	0	5.7	0	5.0	5.1	5.7	0	15.3	0	5.7	6.4	6.4	5.1	5.6
REC	9.0	14.2	9.7	5.1	6.6	5.7	0	5.7	0	5.0	5.1	5.7	0	14.8	0	5.7	6.4	6.4	5.1	5.6

8-2. PIF Circuit

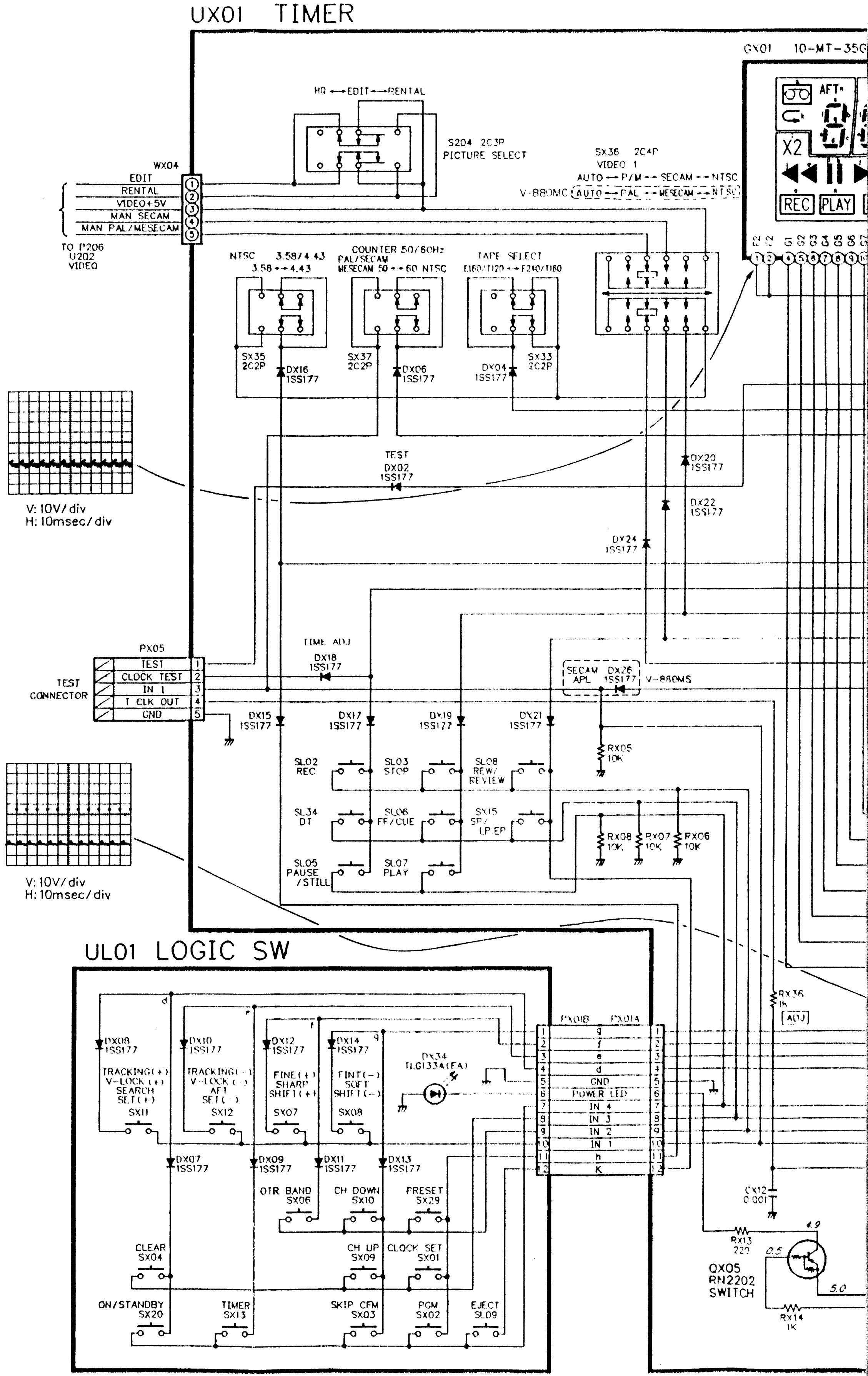


1 2 3 4 5 6 7 8 9 10 11
A B C D E F G
U202 PIF
H002 MMZ263 or MMZ263X1
V A MB BB
H001 EC431L or EC431LX1
+31V +5V CLK DATA LOAD IF MB AGC
TO AUDIO
AUDIO TO MOD
TO VIDEO
VIDEO TO MOD
MOD +B
ON/OFF +9V
EVER +31V
EVER +5V
PIF VIDEO OUT
PIF AUDIO OUT
PICTURE
GND
C091 0.01
L001 22μH
C076 0.01
C075 100μ (16V)
C079 47μ (50V)
C082 2.2μ (50V)
PB01
NC
GND
VIDEO OUT
+B (9V)
AUDIO OUT
NC
NC
VIDEO IN
DET IN
SIF OUT
AUDIO IN
NC
AUDIO MUTE
SYNC DET
P001
WHT PICTURE 7
BLU PLL CLOCK 6
BLU PLL DATA 5
BLU PLL LOAD 4
BLU SYNC DET 3
BLU AUDIO MUTE 2
BLU VIDEO MUTE 1
TO WX03 UX01 TIMER
R073 4.7K
MUTE OFF: 0.1 MUTE ON: (0.7)
MUTE OFF: 0 MUTE ON: (0)
C084 22μ (16V)
Q085 2SC2458Y VIDEO MUTE
MUTE OFF: 5.0 MUTE ON: (0.1)
MUTE OFF: 5.0 MUTE ON: (5.0)
MUTE OFF: – MUTE ON: (4.9)
Q084 RN2201 AUDIO MUTE SWITCH
C073 100μ (16V)
C074 0.01
R075 4.7K
Z090 IF MODULE IF-STD-CZ1
RESO NANCE
VIDEO DET
VIDEO AMP
IF FILTER
IF AMP
B/W NC
IF AGC
+B
RF AGC DEL
RF AGC
9.0
3.6
C081 2.2μ (50V)
5.5MHz 6.5MHz TRAP
BUFFER
PHASE SHIFT
FM DET
LIMITER AMP
6.0MHz B.P.F
C090 0.22μ (50V)
UB01 PIF SECOND
QB01 2SA1048Y AMP
ICB08 TA8710S SIF CONVERTER
500KHz OSC
MIX
CB06 10μ (16V)
RB16 330
RB15 330
RB01 22K
RB03 470K
RB02 100K
RB04 24K
CB02 0.036μ
CB01 0.022μ
QB06 2SC1815Y BUFFER
RB17 10
RB13 10K
LB51 TRF1108
CB03 1μ (50V)
QB02 RN2204 SWITCH
LB02 47μH
XB01 CSB500E
RB26 1M
CB11 470P
CB12 470P
CB13 0.01
RB27 820
CB09 0.01
CB07 47P
CB08 47P
RB19 10K
CB05 10μ (16V)
RB25 22K
CB15 10μ (50V)
CB14 0.01
LB52 TRF1126
RB11 390
QB04 2SC2458Y AUDIO MUTE SWITCH
LB01 12μH
RB20 10K
QB07 2SC2458Y BUFFER
RB22 560
ZB01 SFE6.5MBF
RB06 10K
RB07 100
QB03 2SC2458Y SWITCH
RB09 2.2K
CB04 10μ (16V)
RB23 270
RB21 2.2K
ZB02 SFE5.5MBF
RB24 1.5K
RB28 2.2K
V: 200mV/div. H: 0.5μs/div.
V: 10mV/div. H: 50ns/div.
V: 0.1V/div. H: 20 μs/div.
V: 0.5V/div. H: 20 μs/div.
V: 0.5V/div. H: 20 μs/div.
V: 0.5V/div. H: 2ms/div.

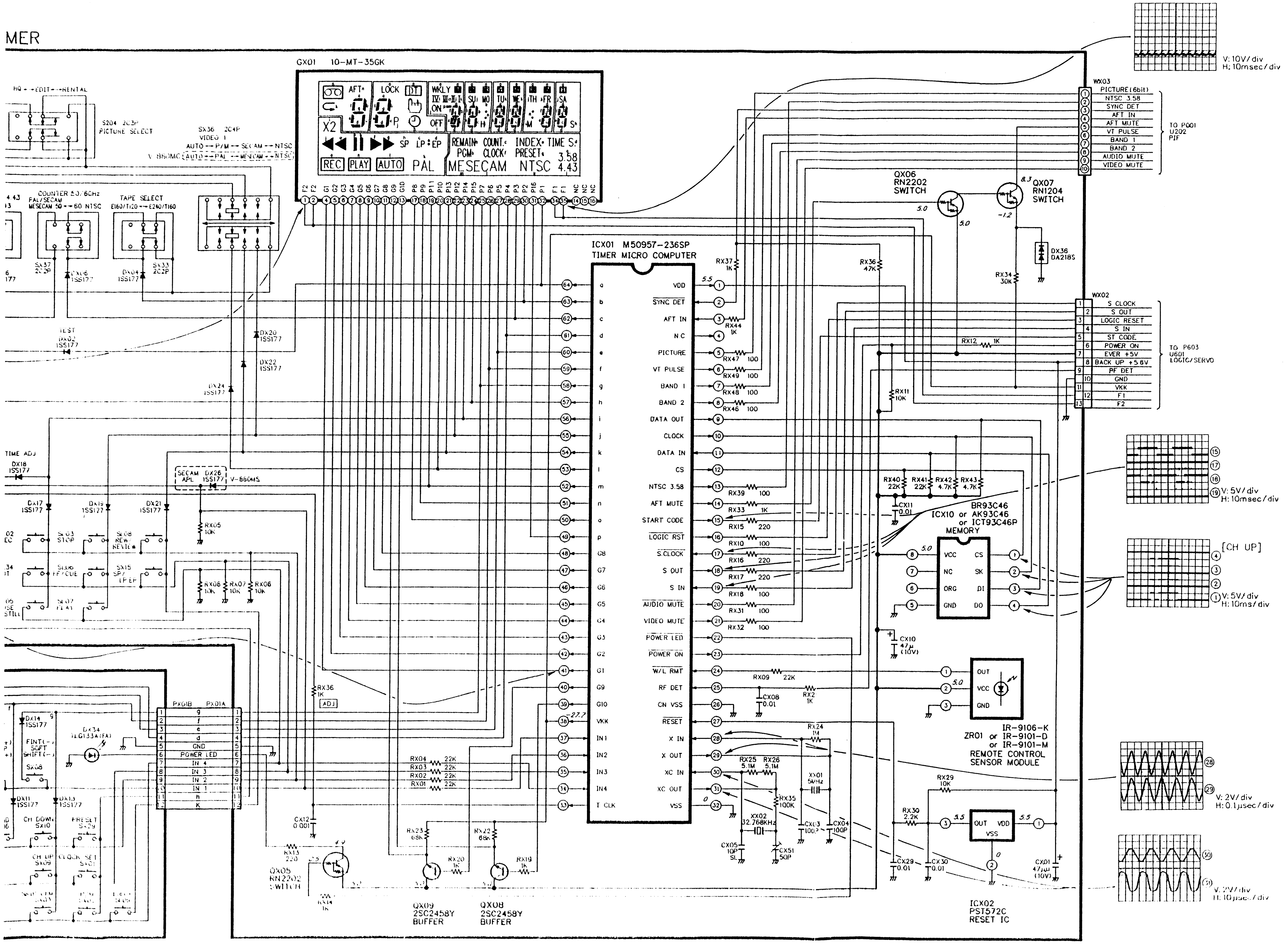
3-22

① Z090, Pin ① E-11  V: 50mV/div H: 20μs/div	⑥ Z090, Pin ⑧ C-10  DET OUT V: 0.5V/div H: 20μs/div 1.5Vp-p
② Z090, Pin ⑥ F-11  V: 0.2V/div H: 20μs/div 1.2Vp-p	⑦ PB01, Pin ⑤ C-10  SIF OUT V: 10mV/div H: 50ns/div [6.0MHz]
③ PB01, Pin ① B-10  PAL V: 0.2V/div H: 20μs/div 1Vp-p	⑧ PB01, Pin ② C-10  PAL/SECAM V: 0.2V/div H: 1ms/div 1.2Vp-p
④ PB01, Pin ① B-10  SECAM V: 0.2V/div H: 20μs/div 1.0Vp-p	⑨ PB01, Pin ② C-10  NTSC V: 0.2V/div H: 1ms/div 0.92Vp-p
⑤ PB01, Pin ① B-10  NTSC V: 0.2V/div H: 20μs/div 1.0Vp-p	⑩ XB01 B-14  V: 0.2V/div H: 0.5μs/div [500KHz]

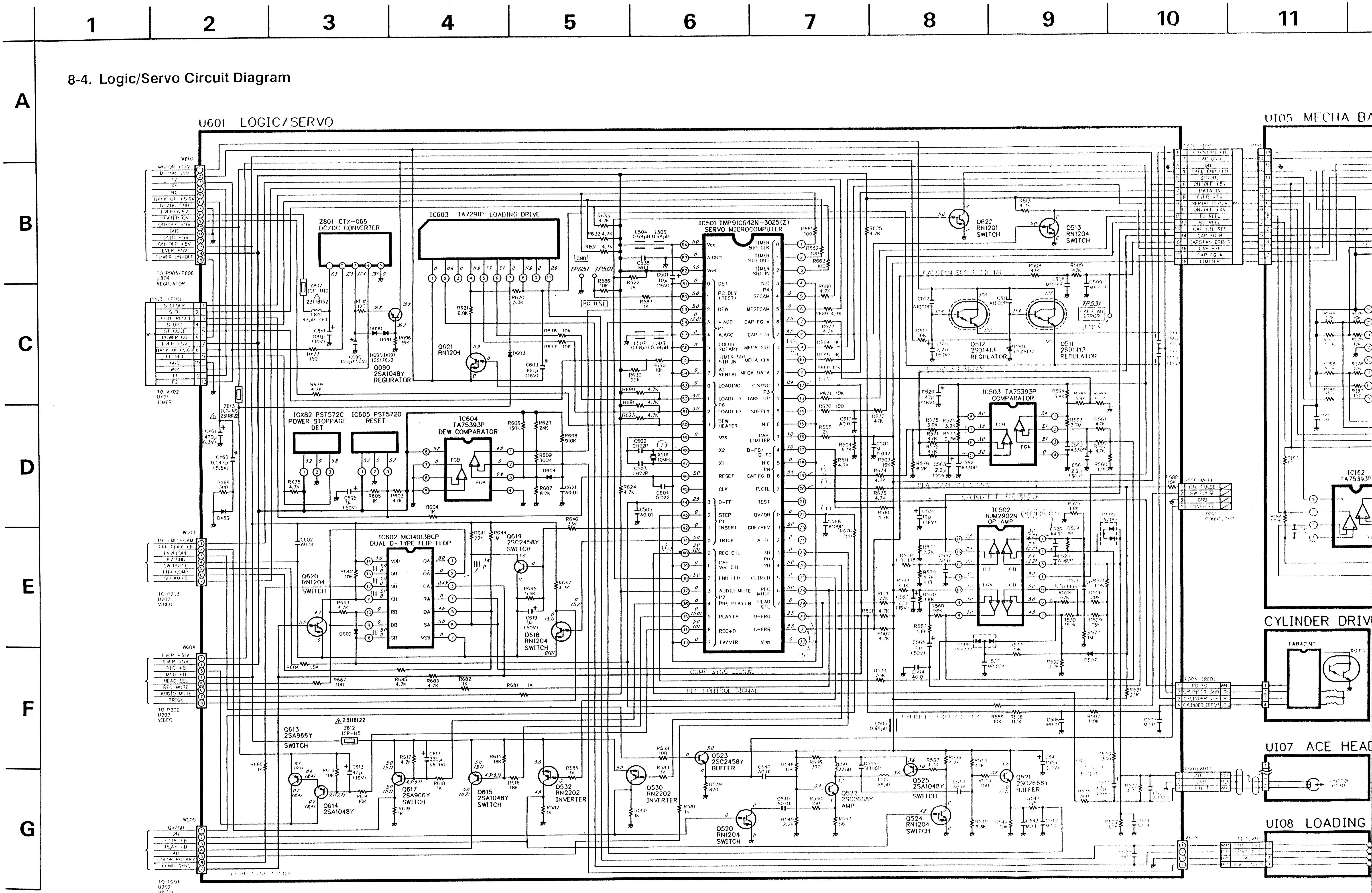
8-3. Timer Circuit Diagram

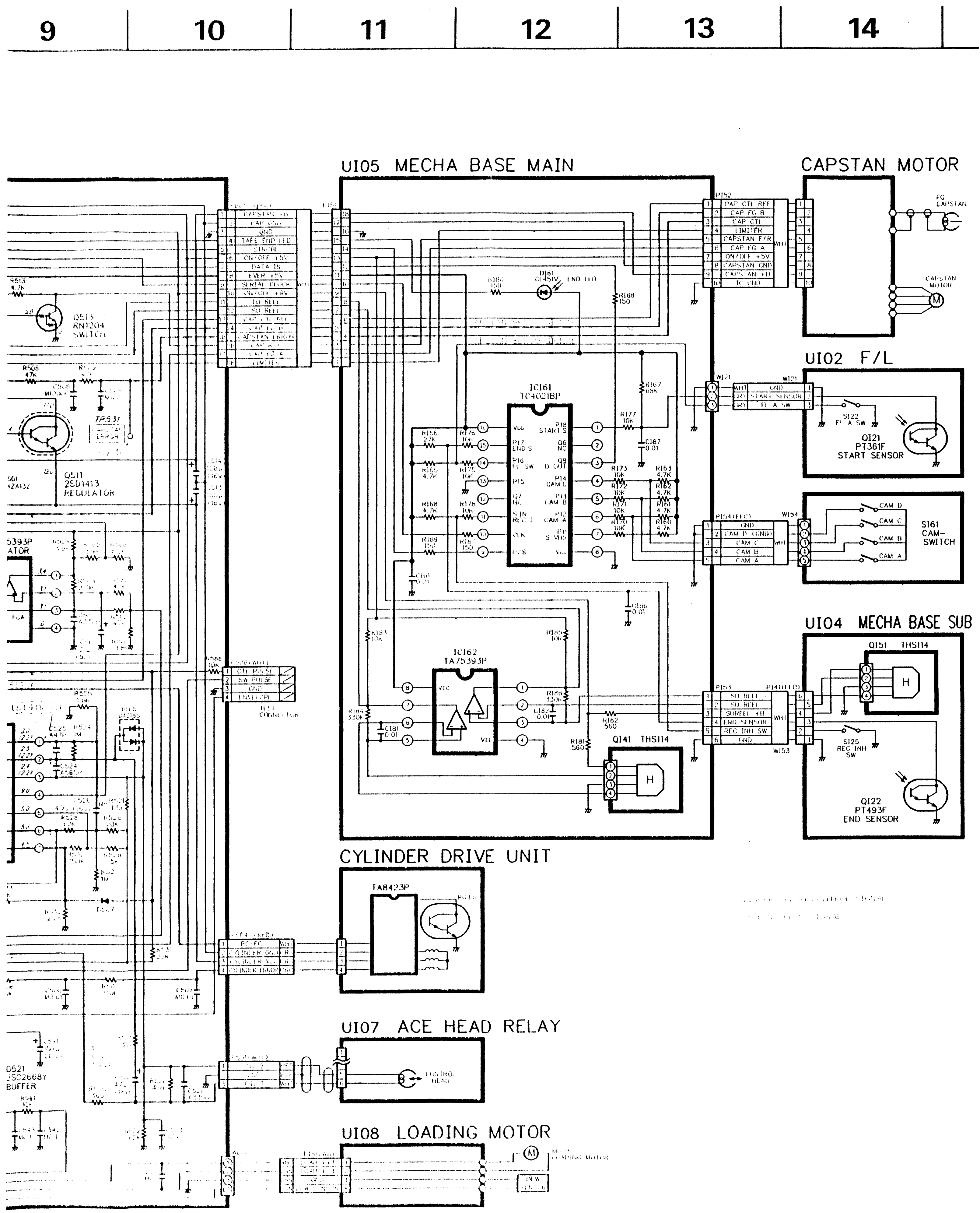


UX01 TIMER
GX01 10-MT-35G
AFT
X2
REC
PLAY
HQ EDIT RENTAL
S204 2C3P PICTURE SELECT
SX36 2C4P VIDEO 1
AUTO P/M SECAM NTSC
V-880MC AUTO PAL MESECAM NTSC
WX04
EDIT
RENTAL
VIDEO+5V
MAN SECAM
MAN PAL/MESECAM
TO P206 U202 VIDEO
NTSC 3.58/4.43 3.58 4.43
COUNTER 50/60Hz PAL/SECAM MESECAM 50 60 NTSC
TAPE SELECT
SX35 2C2P
DX16 1SS177
SX37 2C2P
DX06 1SS177
DY04 1SS177
SX33 2C2P
TEST DX02 1SS177
DX20 1SS177
DX22 1SS177
DX24 1SS177
V: 10V/div H: 10msec/div
PX05
TEST
CLOCK TEST
IN 1
T CLK OUT
GND
TEST CONNECTOR
TIME ADJ DX18 1SS177
SECAM APL DX26 1SS177 V-880MS
DX15 1SS177
DX17 1SS177
DX19 1SS177
DX21 1SS177
RX05 10K
SL02 REC
SL03 STOP
SL08 REW/REVIEW
SL34 DT
SL06 FF/CUE
SX15 SP/LP EP
SL05 PAUSE/STILL
SL07 PLAY
RX08 10K
RX07 10K
RX06 10K
V: 10V/div H: 10msec/div
UL01 LOGIC SW
DX08 1SS177
TRACKING(+) V-LOCK(+) SEARCH SET(+) SX11
DX10 1SS177
TRACKING(-) V-LOCK(-) AFT SET(-) SX12
DX12 1SS177
FINE(+) SHARP SHIFT(+) SX07
DX14 1SS177
FINT(-) SOFT SHIFT(-) SX08
DX34 TLG133A(FA)
PX01B PX01A
GND
POWER LED
IN 4
IN 3
IN 2
IN 1
DX07 1SS177
DX09 1SS177
DX11 1SS177
DX13 1SS177
OTR BAND SX06
CH DOWN SX10
PRESET SX29
CLEAR SX04
CH UP SX09
CLOCK SET SX01
ON/STANDBY SX20
TIMER SX13
SKIP CFM SX03
PGM SX02
EJECT SL09
RX36 1K ADJ
CX12 0.001
RX13 220
QX05 RN2202 SWITCH
RX14 1K
4.9
0.5
5.0


MER
GX01 10-MT-35GK
ICX01 M50957-236SP
TIMER MICRO COMPUTER
VDD
SYNC DET
AFT IN
N C
PICTURE
VT PULSE
BAND 1
BAND 2
DATA OUT
CLOCK
DATA IN
CS
NTSC 3.58
AFT MUTE
START CODE
LOGIC RST
S CLOCK
S OUT
S IN
AUDIO MUTE
VIDEO MUTE
POWER LED
POWER ON
W/L RMT
RF DET
CN VSS
RESET
X IN
X OUT
XC IN
XC OUT
VSS
VKK
IN1
IN2
IN3
IN4
T CLK
WX03
PICTURE(6bit)
NTSC 3.58
SYNC DET
AFT IN
AFT MUTE
VT PULSE
BAND 1
BAND 2
AUDIO MUTE
VIDEO MUTE
TO P001
U202
PIF
WX02
S CLOCK
S OUT
LOGIC RESET
S IN
ST CODE
POWER ON
EVER +5V
BACK UP +5.6V
PF DET
GND
VKK
F1
F2
TO P603
U601
LOGIC/SERVO
V: 10V/div
H: 10msec/div
QX06
RN2202
SWITCH
QX07
RN1204
SWITCH
DX36
DA218S
RX37 1K
RX36 47K
RX34 30K
RX12 1K
RX11 10K
RX40 22K
RX41 22K
RX42 4.7K
RX43 4.7K
CX11 0.01
BR93C46
ICX10 or AK93C46
or ICT93C46P
MEMORY
VCC
NC
ORG
GND
CS
SK
DI
DO
V: 5V/div
H: 10msec/div
[CH UP]
V: 5V/div
H: 10ms/div
CX10 47μ (10V)
OUT
VCC
GND
ZR01 or IR-9106-K
or IR-9101-D
or IR-9101-M
REMOTE CONTROL
SENSOR MODULE
V: 2V/div
H: 0.1μsec/div
V: 2V/div
H: 10μsec/div
RX29 10K
RX30 2.2K
ICX02
PST572C
RESET IC
CX01 47μ (10V)
CX29 0.01
CX30 0.01
RX09 22K
RX2 1K
RX24 1M
CX08 0.01
RX25 5.1M
RX26 5.1M
XX01 5MHz
RX35 100K
XX02 32.768KHz
CX03 100P
CX04 100P
CX05 10P SL
CX51 50P
RX44 1K
RX47 100
RX49 100
RX48 100
RX46 100
RX39 100
RX33 1K
RX15 220
RX10 100
RX16 220
RX17 220
RX18 100
RX31 100
RX32 100
RX04 22K
RX03 22K
RX02 22K
RX01 22K
RX23 68K
RX22 68K
RX20 1K
RX19 1K
QX09
2SC2458Y
BUFFER
QX08
2SC2458Y
BUFFER
QX05
RN2202
SWITCH
RX13 220
RX14 1K
CX12 0.001
RX36 1K
ADJ
PX01B PX01A
POWER LED
IN 4
IN 3
IN 2
IN 1
GND
DX34 TLG133A(FA)
DX14 1SS177
FINT(-) SOFT SHIFT(-)
SX08
DX11 1SS177
DX13 1SS177
CH DOWN SX10
PRESET SX29
CH UP SX09
CLOCK SET SX01
RX05 10K
RX08 10K
RX07 10K
RX06 10K
SECAM APL DX26 1SS177
V-886MS
DX17 1SS177
DX19 1SS177
DX21 1SS177
SX03 STOP
SX08 REW REVIEW
SX16 FF/CUE
SX15 SP/LP EP
SX07 PLAY
TIME ADJ
DX18 1SS177
TEST DX02 1SS177
DX20 1SS177
DX22 1SS177
DX24 1SS177
COUNTER 50/60Hz
PAL/SECAM
MESECAM 50 ←→ 60 NTSC
TAPE SELECT
E160/T120 ←→ E240/T160
SX37 2C2P
DX06 1SS177
DX04 1SS177
SX33 2C2P
S204 2C3P
PICTURE SELECT
SX36 2C4P
VIDEO 1
AUTO ←→ P/M ←→ SECAM ←→ NTSC
V-886MC AUTO ←→ PAL ←→ MESECAM ←→ NTSC
HQ ←→ EDIT ←→ RENTAL
AFT
LOCK
DT
WKLY
SU
MO
TU
WE
TH
FR
SA
ON
OFF
X2
SP
LP
EP
REMAIN
COUNT
INDEX
TIME S
PGM
CLOCK
PRESET
3.58
4.43
REC
PLAY
AUTO
PAL
MESECAM
NTSC
5.5
5.0
8.3
-1.2
-27.7
0

8-4. Logic/Servo Circuit Diagram


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
U601 LOGIC/SERVO
W602
TO PB05/PB06
U804
REGULATOR
W603
TO WX02
UX01
TIMER
W503
TO P203
U202
VIDEO
W604
TO P202
U202
VIDEO
W505
TO P204
U202
VIDEO
Z801 CTX-066
DC/DC CONVERTER
IC603 TA7291P LOADING DRIVE
IC501 TMP91CG42N-3025(Z)
SERVO MICROCOMPUTER
ICX82 PST572C
POWER STOPPAGE
DET
IC605 PST572D
RESET
IC604
TA75393P
DEW COMPARATOR
IC602 MC14013BCP
DUAL D-TYPE FLIP FLOP
Q619
2SC2458Y
SWITCH
Q620
RN1204
SWITCH
Q618
RN1204
SWITCH
Q621
RN1204
Q090
2SA1048Y
REGURATOR
Q613
2SA966Y
SWITCH
Q614
2SA1048Y
Q617
2SA966Y
SWITCH
Q615
2SA1048Y
SWITCH
Q532
RN2202
INVERTER
Q530
RN2202
INVERTER
Q523
2SC2458Y
BUFFER
Q520
RN1204
SWITCH
Q522
2SC2668Y
AMP
Q525
2SA1048Y
SWITCH
Q524
RN1204
SWITCH
Q521
2SC2668Y
BUFFER
Q622
RN1201
SWITCH
Q513
RN1204
SWITCH
Q512
2SD1413
REGULATOR
Q511
2SD1413
REGULATOR
IC503 TA75393P
COMPARATOR
IC502
NJM2902N
OP AMP
TP531
CAPSTAN
ERROR
TPG51
TP501
PG TEST
GND
COMP. SYNC SIGNAL
REC CONTROL SIGNAL
CYLINDER ERROR SIGNAL
CAPSTAN ERROR SIGNAL
PB CONTROL SIGNAL
CONTROL SIGNAL
P556
TEST
CONNECTOR
P501 (RED)
UI05 MECHA BA
CYLINDER DRIV
UI07 ACE HEAD
UI08 LOADING
IC162
TA75393P
TA8423P


9
10
11
12
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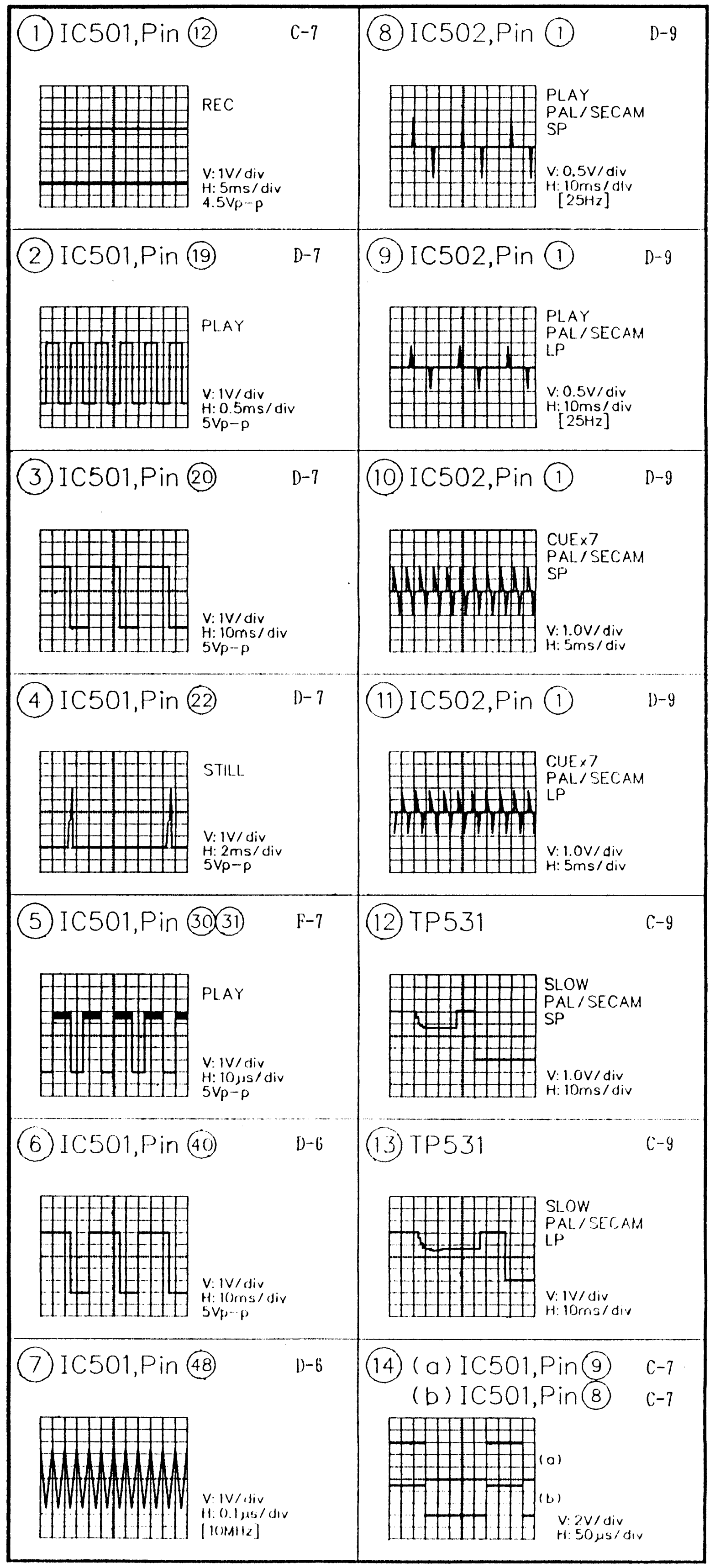
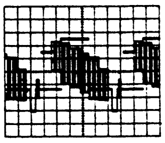
15
16
17
18
19
20
UI05 MECHA BASE MAIN
CAPSTAN MOTOR
UI02 F/L
UI04 MECHA BASE SUB
CYLINDER DRIVE UNIT
UI07 ACE HEAD RELAY
UI08 LOADING MOTOR
IC161
TC4021BP
IC162
TA7539P
TA8423P
Q121
PT361F
START SENSOR
Q122
PT493F
END SENSOR
S161
CAM-SWITCH
Q141 THS114
Q151 THS114
S122
S125
REC INH SW
D161
END LED
Q513
RN1204
SWITCH
Q511
2SD1413
REGULATOR
Q521
2SC2668Y
BUFFER
TP531
CAP CTL REF
CAP FG B
CAP CTL
LIMITER
CAPSTAN F/R
CAP FG A
ON/OFF +5V
CAPSTAN GND
CAPSTAN +B
IC GND
GND
START SENSOR
FL A SW
CAM D (GND)
CAM C
CAM B
CAM A
SU REEL
SU REEL
SUREEL +B
END SENSOR
REC INH SW
CAPSTAN MOTOR
FG CAPSTAN
CONTROL HEAD
LOADING MOTOR


① IC501,Pin ⑫ C-7
REC
V: 1V/div
H: 5ms/div
4.5Vp-p
⑧ IC502,Pin ① D-9
PLAY
PAL/SECAM
SP
V: 0.5V/div
H: 10ms/div
[25Hz]
② IC501,Pin ⑲ D-7
PLAY
V: 1V/div
H: 0.5ms/div
5Vp-p
⑨ IC502,Pin ① D-9
PLAY
PAL/SECAM
LP
V: 0.5V/div
H: 10ms/div
[25Hz]
③ IC501,Pin ⑳ D-7
V: 1V/div
H: 10ms/div
5Vp-p
⑩ IC502,Pin ① D-9
CUEx7
PAL/SECAM
SP
V: 1.0V/div
H: 5ms/div
④ IC501,Pin ㉒ D-7
STILL
V: 1V/div
H: 2ms/div
5Vp-p
⑪ IC502,Pin ① D-9
CUEx7
PAL/SECAM
LP
V: 1.0V/div
H: 5ms/div
⑤ IC501,Pin ㉚㉛ F-7
PLAY
V: 1V/div
H: 10μs/div
5Vp-p
⑫ TP531 C-9
SLOW
PAL/SECAM
SP
V: 1.0V/div
H: 10ms/div
⑥ IC501,Pin ㊵ D-6
V: 1V/div
H: 10ms/div
5Vp-p
⑬ TP531 C-9
SLOW
PAL/SECAM
LP
V: 1V/div
H: 10ms/div
⑦ IC501,Pin ㊽ D-6
V: 1V/div
H: 0.1μs/div
[10MHz]
⑭ (a) IC501,Pin ⑨ C-7
(b) IC501,Pin ⑧ C-7
(a)
(b)
V: 2V/div
H: 50μs/div

8-5. Video Circuit Diagram

PLAY Mode

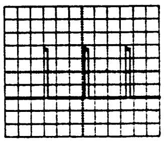
① TP201 G-5



PAL

V: 0.1V/div
H: 10μs/div

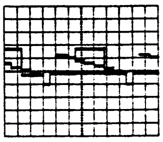
② TP204 C-7



(PAL)

V: 1V/div
H: 20μs/div

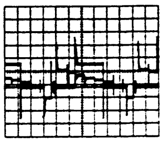
③ Q213,EMITTER F-7



PAL

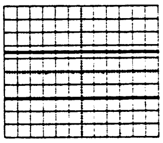
V: 0.2V/div
H: 10μs/div

④ TP206 F-6



V: 0.2V/div
H: 100μs/div

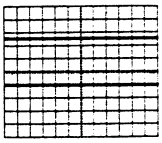
⑤ TP202 C-14



SP PAL

V: 0.1V/div
H: 10μs/div

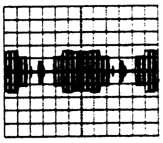
⑥ TP202 C-14



LP PAL

V: 0.1V/div
H: 10μs/div

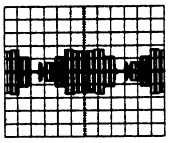
⑦ IC201,Pin ㉟ C-14



PAL

V: 0.2V/div
H: 10μs/div

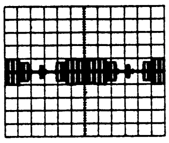
⑧ IC201,Pin ㉟ C-8



NTSC
(3.58MHz)

V: 0.2V/div
H: 10μs/div

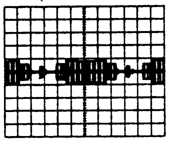
⑨ TP208 B-14



SP PAL

V: 0.1V/div
H: 10μs/div

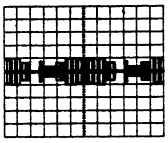
⑩ TP208 B-14



LP PAL

V: 0.1V/div
H: 10μs/div

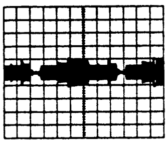
⑪ TP208 B-14



SP NTSC

V: 0.1V/div
H: 10μs/div

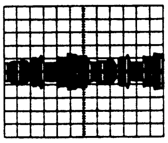
⑫ TP208 B-14



SP
MESECAM

V: 0.1V/div
H: 10μs/div

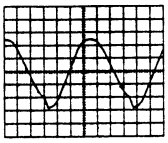
⑬ TP208 B-14



SP SECAM

V: 0.1V/div
H: 10μs/div

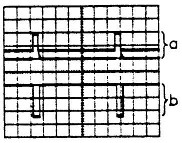
⑭ TP234 D-14



MESECAM

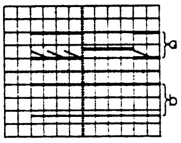
V: 1V/div
H: 20μs/div

⑮ a: IC201,Pin ㉟ C-9
b: Q221,COLLECTOR B-9



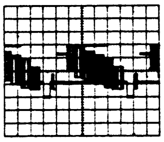
V: 2V/div
H: 10μs/div

⑯ a: IC201,Pin ㉟ C-9
b: Q221,COLLECTOR B-9



V: 2V/div
H: 5ms/div

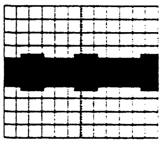
⑰ TP203 F-2



PAL

REC Mode

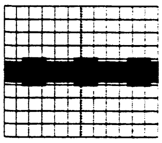
1 TP101 A-2



SP PAL

V: 0.1V/div
H: 5ms/div

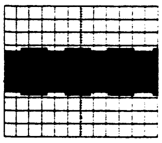
2 TP101 A-2



LP PAL

V: 0.1V/div
H: 5ms/div

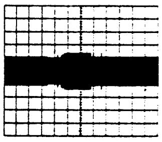
3 TP101 A-2



SP NTSC

V: 0.1V/div
H: 5ms/div

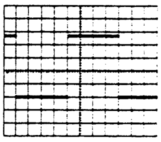
4 TP101 A-2



EP NTSC

V: 0.1V/div
H: 5ms/div

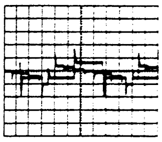
5 TP103 B-2



PAL

V: 1V/div
H: 5ms/div

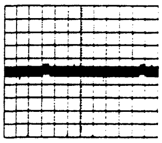
6 Q213,EMITTER F-7



PAL

V: 0.1V/div
H: 10µs/div

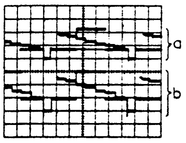
7 TP212 C-7



PAL
(SLIT OPEN)

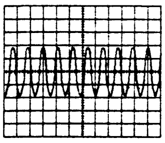
V: 0.2V/div
H: 10µs/div

8 a: IC201,Pin ㊾ B-4
b: IC201,Pin ㊼ C-5



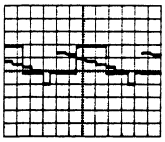
V: 0.2V/div
H: 10µs/div

9 Q228,EMITTER C-3



V: 0.2V/div
H: 0.1µs/div

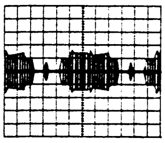
10 IC201,Pin ⑥ F-6



PAL

V: 0.2V/div
H: 10µs/div

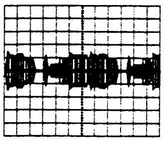
11 IC201,Pin ㊴ C-7



PAL SP

V: 0.1V/div
H: 10µs/div

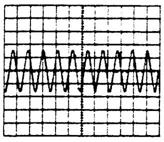
12 IC201,Pin ㊴ C-7



NTSC SP

V: 0.1V/div
H: 10µs/div

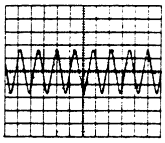
13 TP211 E-8



(4.43MHz)

V: 0.2V/div
H: 0.2µs/div

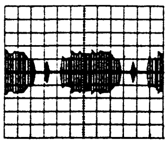
14 TP211 G-8



(3.58MHz)

V: 0.2V/div
H: 0.2µs/div

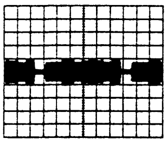
15 Q412,EMITTER E-15



PAL

V: 0.2V/div
H: 10µs/div

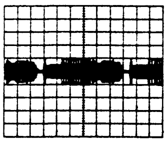
16 Q412,EMITTER E-15



MESECAM

V: 0.2V/div
H: 10µs/div

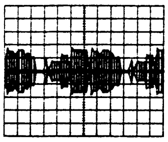
17 Q412,EMITTER E-15



SECAM

V: 0.2V/div
H: 10µs/div

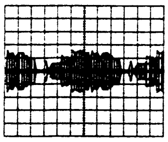
18 Q412,EMITTER E-15



NTSC
3.58MHz

V: 0.2V/div
H: 10µs/div

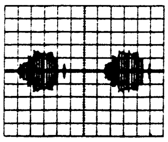
19 Q412,EMITTER E-15



NTSC
4.43MHz

V: 0.2V/div
H: 10µs/div

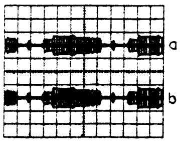
20 Q412,EMITTER E-15



NTSC
ON PAL

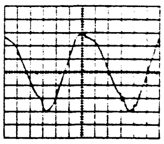
V: 0.2V/div
H: 20µs/div

21 a: TP407 E-16
b: TP406 E-16



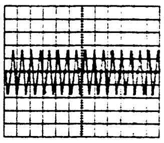
V: 0.5V/div
H: 10µs/div

22 TP235 E-13



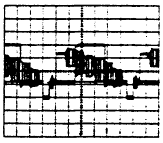
V: 1V/div
H: 20µs/div

23 Q229,EMITTER D-3



V: 0.2V/div
H: 0.1µs/div

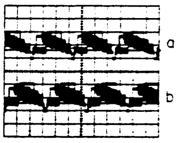
24 TP203 F-2



PAL

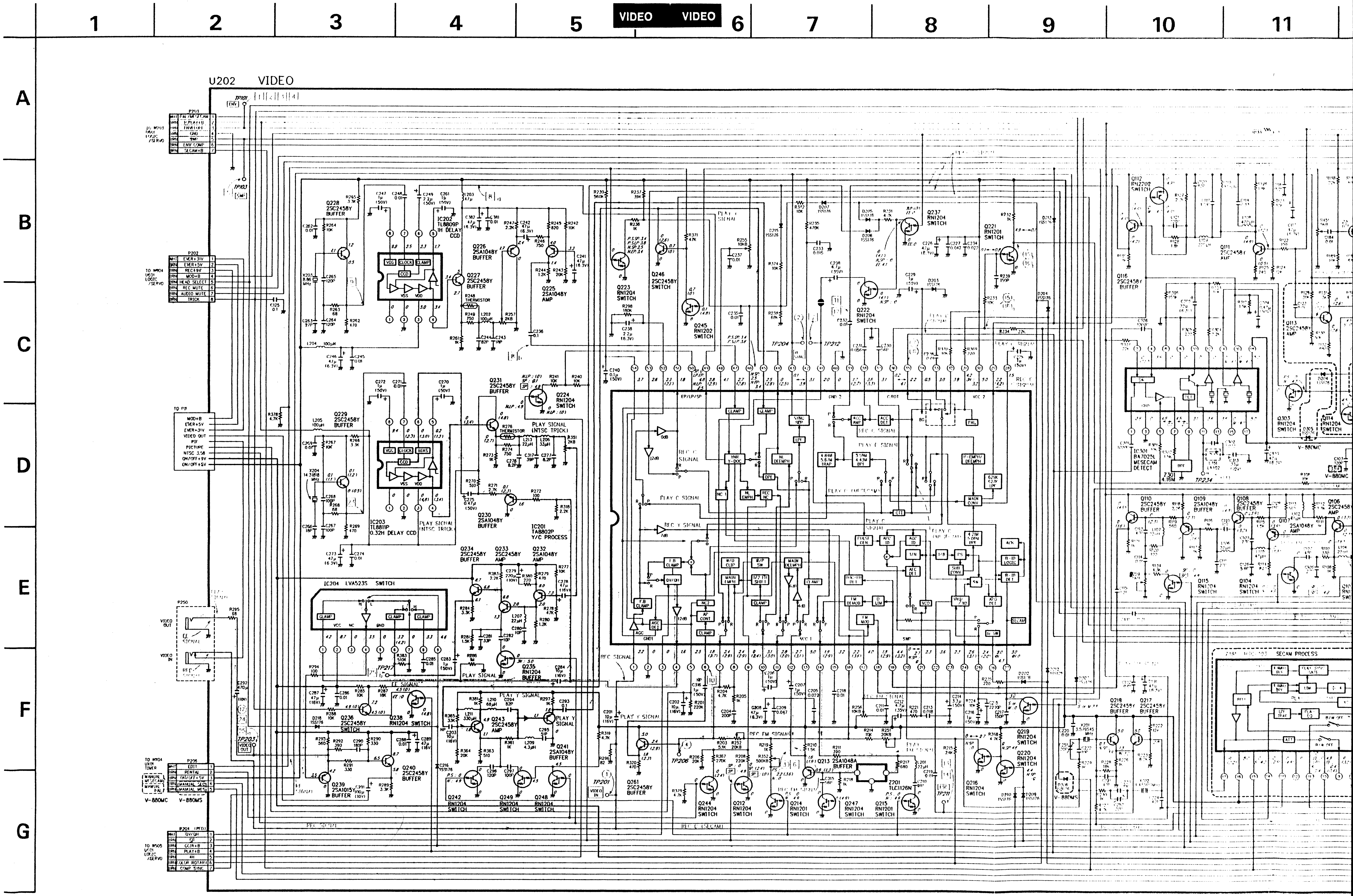
V: 0.5V/div
H: 10µs/div

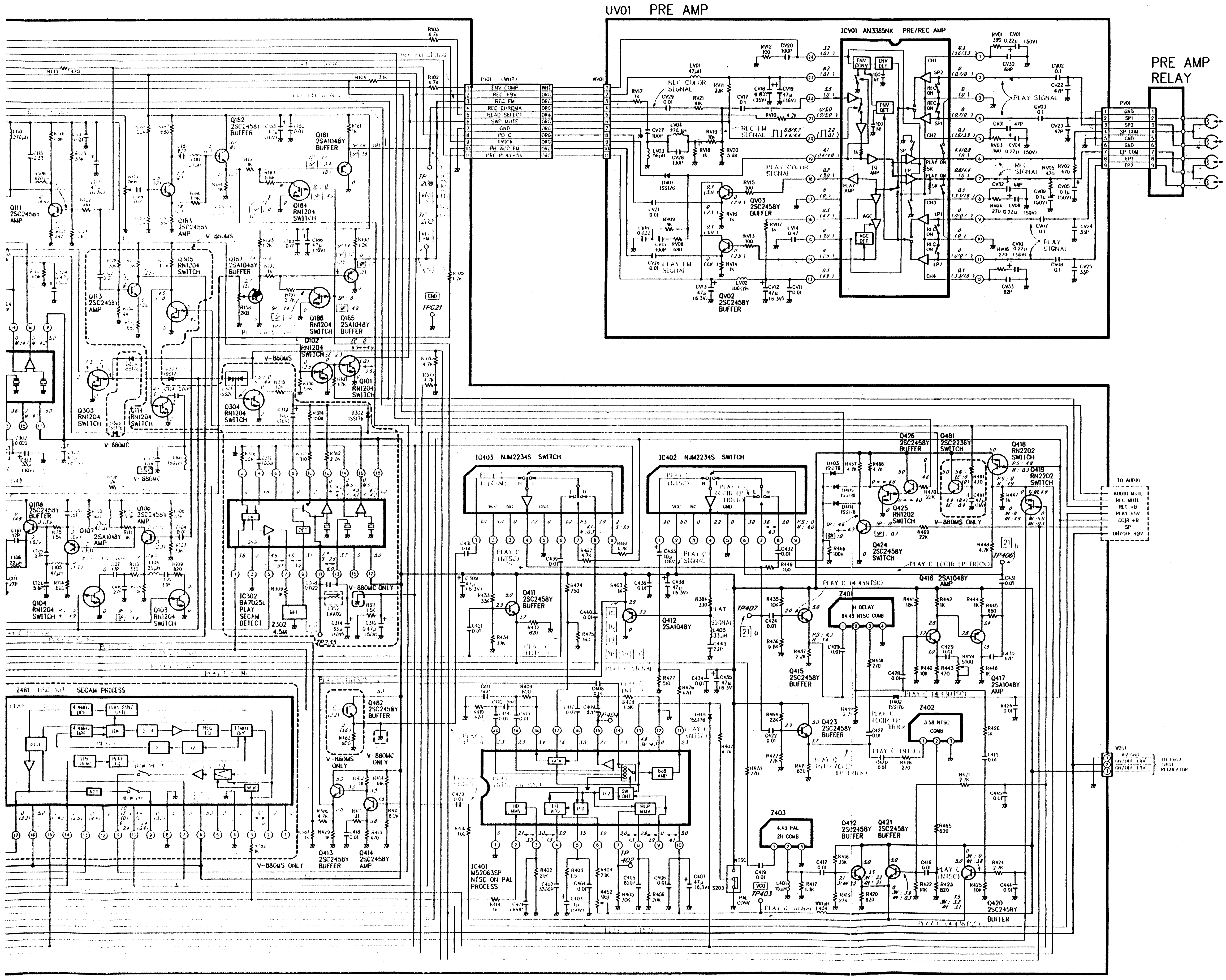
25 a: TP203 F-2
b: TP217 F-3



NTSC

V: 1V/div
H: 20µs/div


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
U202 VIDEO
TP101
TP103
P203
P202
TO W704 U501 LOGIC /SERVO
EVER+31V
EVER+5V
REC+9V
MOD+B
HEAD SELECT
REC MUTE
AUDIO MUTE
TRICK
TO P8
Q228 2SC2458Y BUFFER
IC202 TL8809P 1H DELAY CCD
Q226 2SA1048Y BUFFER
Q227 2SC2458Y BUFFER
Q225 2SA1048Y AMP
Q229 2SC2458Y BUFFER
IC203 TL8811P 0.32H DELAY CCD
Q231 2SC2458Y BUFFER
Q224 RN1204 SWITCH
PLAY SIGNAL (NTSC TRICK)
Q230 2SA1048Y BUFFER
IC201 TA8802P Y/C PROCESS
Q234 2SC2458Y BUFFER
Q233 2SC2458Y AMP
Q232 2SA1048Y AMP
IC204 LVA523S SWITCH
Q235 RN1204 BUFFER
P250
VIDEO OUT
VIDEO IN
Q236 2SC2458Y SWITCH
Q238 RN1204 SWITCH
Q243 2SC2458Y AMP
Q241 2SA1048Y BUFFER
Q239 2SA1015Y BUFFER
Q240 2SC2458Y BUFFER
Q242 RN1204 SWITCH
Q249 RN1204 SWITCH
Q248 RN1204 SWITCH
P206
P204
V-880MC
V-880MS
Q223 RN1204 SWITCH
Q246 2SC2458Y SWITCH
Q245 RN1202 SWITCH
Q237 RN1204 SWITCH
Q222 RN1204 SWITCH
Q221 RN1201 SWITCH
TP204
TP212
REC C SIGNAL
PLAY C SIGNAL
REC Y SIGNAL
PLAY Y SIGNAL
REC FM SIGNAL
Q261 2SC2458Y BUFFER
TP201
TP206
Q244 RN1204 SWITCH
Q212 RN1204 SWITCH
Q214 RN1201 SWITCH
Q213 2SA1048A BUFFER
Z201 TLC1126N
Q247 RN1204 SWITCH
Q215 RN1201 SWITCH
TP211
Q216 RN1204 SWITCH
Q219 RN1204 SWITCH
Q220 RN1204 SWITCH
Q218 2SC2458Y BUFFER
Q217 2SC2458Y BUFFER
Q112 RN2702 SWITCH
Q111 2SC2458Y AMP
Q116 2SC2458Y BUFFER
Q113 2SC2458Y AMP
IC101 BA7025L MESECAM DETECT
Q103 RN1204 SWITCH
Q114 RN1204 SWITCH
Q110 2SC2458Y BUFFER
Q109 2SA1048Y BUFFER
Q108 2SC2458Y BUFFER
Q107 2SA1048Y AMP
Q106 2SC2458Y AMP
Q115 RN1204 SWITCH
Q104 RN1204 SWITCH
SECAM PROCESS
TP234


UV01 PRE AMP
ICV01 AN3385NK PRE/REC AMP
PRE AMP RELAY
PV01
SP1
SP2
EP1
EP2
P101 (WHT)
ENV COMP
REC +9V
REC FM
REC CHROMA
HEAD SELECT
SWD MUTE
GND
PB C
TRICK
PB ACC FM
PRE PLAY +5V
REC COLOR SIGNAL
REC FM SIGNAL
PLAY COLOR SIGNAL
PLAY FM SIGNAL
PLAY SIGNAL
REC SIGNAL
QV03 2SC2458Y BUFFER
QV02 2SC2458Y BUFFER
Q182 2SC2458Y BUFFER
Q181 2SA1048Y BUFFER
Q184 RN1204 SWITCH
Q183 2SC2458Y AMP
Q187 2SA1048Y BUFFER
Q186 RN1204 SWITCH
Q185 2SA1048Y BUFFER
Q305 RN1204 SWITCH
Q113 2SC2458Y AMP
Q111 2SC2458Y AMP
Q102 RN1204 SWITCH
Q101 RN1204 SWITCH
Q303 RN1204 SWITCH
Q114 RN1204 SWITCH
Q304 RN1204 SWITCH
V-880MS
V-880MC
V-880MC ONLY
V-880MS ONLY
Q108 2SC2458Y BUFFER
Q107 2SA1048Y AMP
Q106 2SC2458Y AMP
Q104 RN1204 SWITCH
Q103 RN1204 SWITCH
IC302 BA7025L PLAY SECAM DETECT
Z302 4.5M
TP235
Z481 HSC-103 SECAM PROCESS
IC403 NJM2234S SWITCH
IC402 NJM2234S SWITCH
Q411 2SC2458Y BUFFER
Q412 2SA1048Y
Q482 2SC2458Y BUFFER
Q413 2SC2458Y BUFFER
Q414 2SC2458Y AMP
IC401 M52063SP NTSC ON PAL PROCESS
Q426 2SC2458Y BUFFER
Q481 2SC2236Y SWITCH
Q418 RN2202 SWITCH
Q419 RN2202 SWITCH
Q425 RN1202 SWITCH
Q424 2SC2458Y SWITCH
V-880MS ONLY
Q416 2SA1048Y AMP
Z401 1H DELAY 4.43 NTSC COMB
Q415 2SC2458Y BUFFER
Q417 2SA1048Y AMP
Q423 2SC2458Y BUFFER
Z402 3.58 NTSC COMB
Z403 4.43 PAL 2H COMB
Q422 2SC2458Y BUFFER
Q421 2SC2458Y BUFFER
Q420 2SC2458Y BUFFER
TO AUDIO
AUDIO MUTE
REC +B
PLAY +5V
CCIR +B
SP
ON/OFF +9V
W201
TO POWER REGULATOR
TP406
TP407
TP402
TP403
TPG21
S203
PAL NTSC

REC :
PLAY : ( )
SP : SP MODE
EP : EP MODE
[SP] : EXCEPT FOR SP
S : SECAM
P : PAL
M : MESECAM
P.S : PAL SECAM
N : NTSC
N.SP : NTSC SP
N.LP : NTSC LP
4N : 4.43 NTSC
3N : 3.58 NTSC
EE : EE MODE
M.S : MANUAL SECAM
M.S : MANUAL SECAM
3/4N : 3.48/4.43NTSC

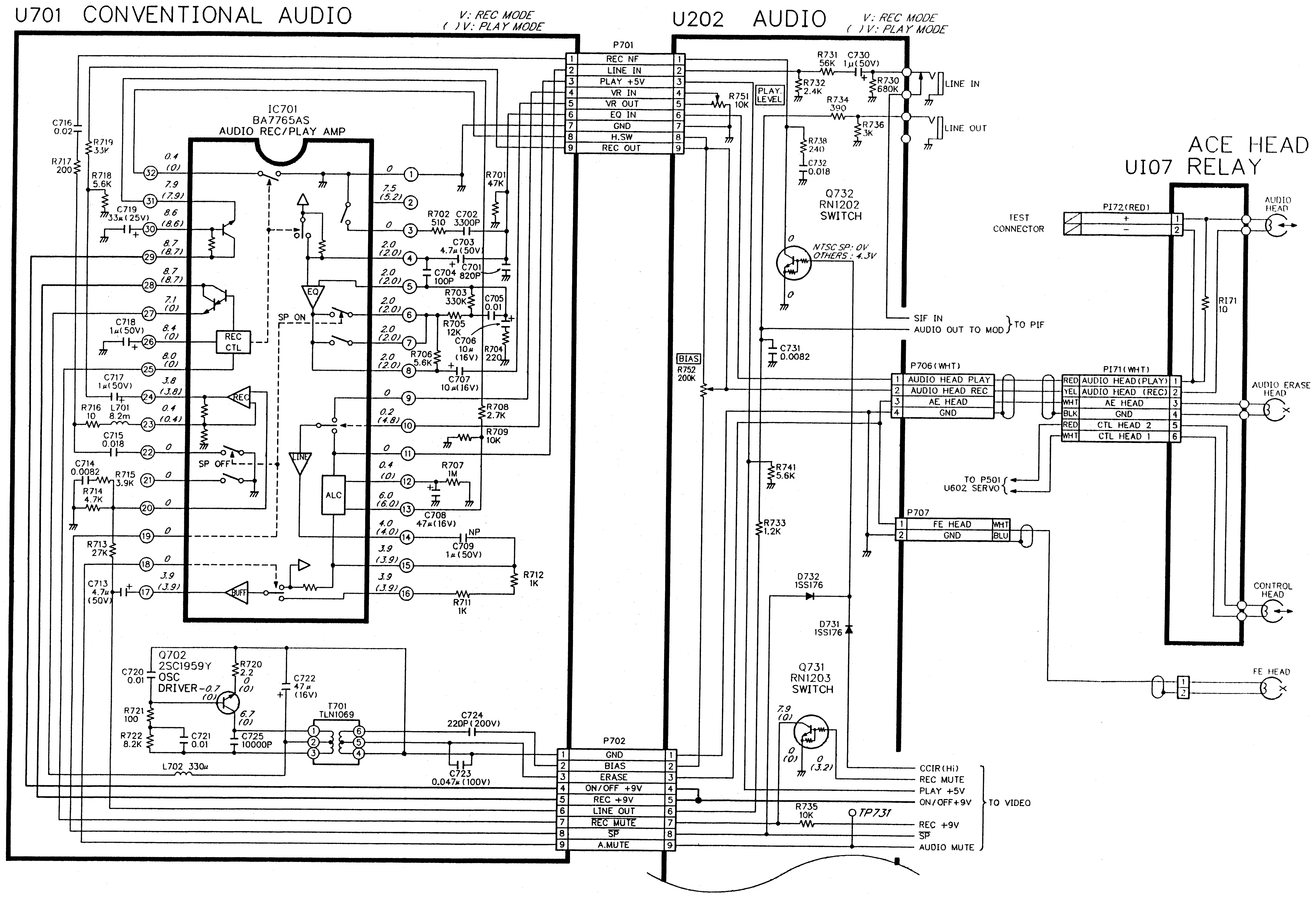
* PLAY MODE :
UNLESS OTHERWISE NOTED
THE VOLTAGE VALVE IS
SAME AS THAT IN REC MODE
(Q181–Q187
Q237
EE: Same as PLAY)

PLAY SIGNAL { PLAY C SIGNAL / PLAY FM SIGNAL
REC SIGNAL { REC C SIGNAL / REC FM SIGNAL
PLAY SIGNAL ([illegible])
E.E. SIGNAL
PLAY C SIGNAL
REC C SIGNAL
PLAY C SIGNAL { [illegible] / SECAM
REC C SIGNAL (SECAM)

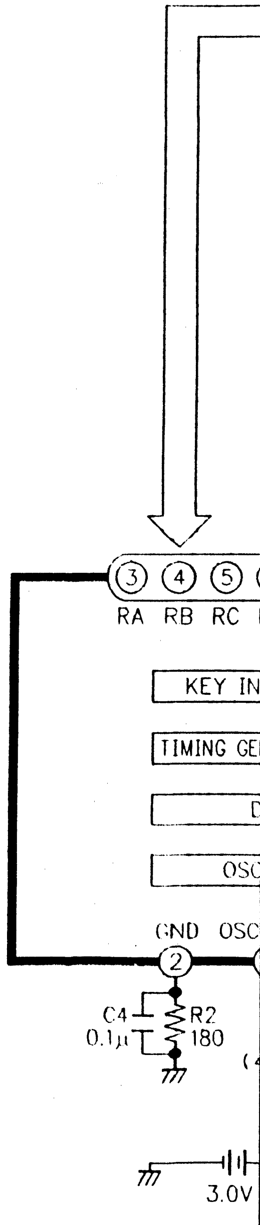
1 2 3 4 5 6 7 8 9 10 11

A B C D E F G

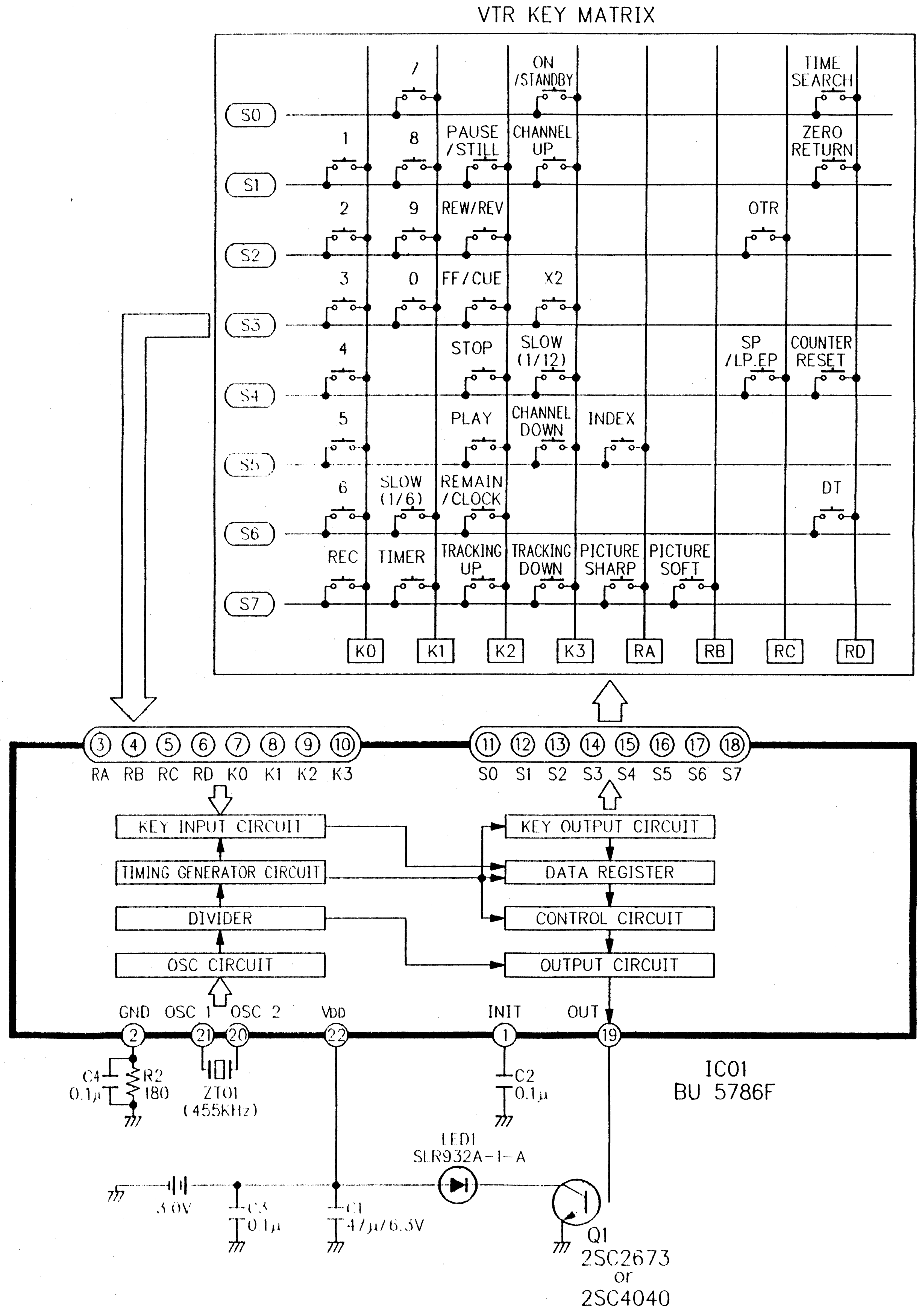
8-6. Audio Circuit Diagram


U701 CONVENTIONAL AUDIO
V: REC MODE
( ) V: PLAY MODE
IC701
BA7765AS
AUDIO REC/PLAY AMP
REC CTL
EQ
LINE
ALC
BUFF
REC
SP ON
SP OFF
P701
REC NF
LINE IN
PLAY +5V
VR IN
VR OUT
EQ IN
GND
H.SW
REC OUT
C716 0.02
R719 33K
R717 200
R718 5.6K
C719 33μ(25V)
C718 1μ(50V)
C717 1μ(50V)
R716 10
L701 8.2m
C715 0.018
C714 0.0082
R715 3.9K
R714 4.7K
R713 27K
C713 4.7μ (50V)
R701 47K
R702 510
C702 3300P
C703 4.7μ(50V)
C701 820P
C704 100P
R703 330K
C705 0.01
R705 12K
C706 10μ (16V)
R704 220
R706 5.6K
C707 10μ(16V)
R708 2.7K
R709 10K
R707 1M
C708 47μ(16V)
C709 1μ(50V)
NP
R712 1K
R711 1K
Q702
2SC1959Y
OSC DRIVER
C720 0.01
R720 2.2
C722 47μ (16V)
R721 100
R722 8.2K
C721 0.01
C725 10000P
T701 TLN1069
L702 330μ
C724 220P(200V)
C723 0.047μ(100V)
P702
GND
BIAS
ERASE
ON/OFF +9V
REC +9V
LINE OUT
REC MUTE
SP
A.MUTE
U202 AUDIO
V: REC MODE
( ) V: PLAY MODE
R731 56K
C730 1μ(50V)
R732 2.4K
R730 680K
LINE IN
R751 10K
PLAY. LEVEL
R734 390
R736 3K
LINE OUT
R738 240
C732 0.018
Q732
RN1202
SWITCH
NTSC SP: 0V
OTHERS: 4.3V
SIF IN
AUDIO OUT TO MOD
TO PIF
C731 0.0082
BIAS
R752 200K
P706(WHT)
AUDIO HEAD PLAY
AUDIO HEAD REC
AE HEAD
GND
R741 5.6K
R733 1.2K
P707
FE HEAD
GND
WHT
BLU
D732 1SS176
D731 1SS176
Q731
RN1203
SWITCH
R735 10K
TP731
CCIR(Hi)
REC MUTE
PLAY +5V
ON/OFF+9V
REC +9V
SP
AUDIO MUTE
TO VIDEO
ACE HEAD
U107 RELAY
TEST CONNECTOR
P172(RED)
P171(WHT)
RED
YEL
WHT
BLK
AUDIO HEAD(PLAY)
AUDIO HEAD (REC)
AE HEAD
CTL HEAD 2
CTL HEAD 1
R171 10
AUDIO HEAD
AUDIO ERASE HEAD
CONTROL HEAD
FE HEAD
TO P501
U602 SERVO

8-7. Remote Cotntro

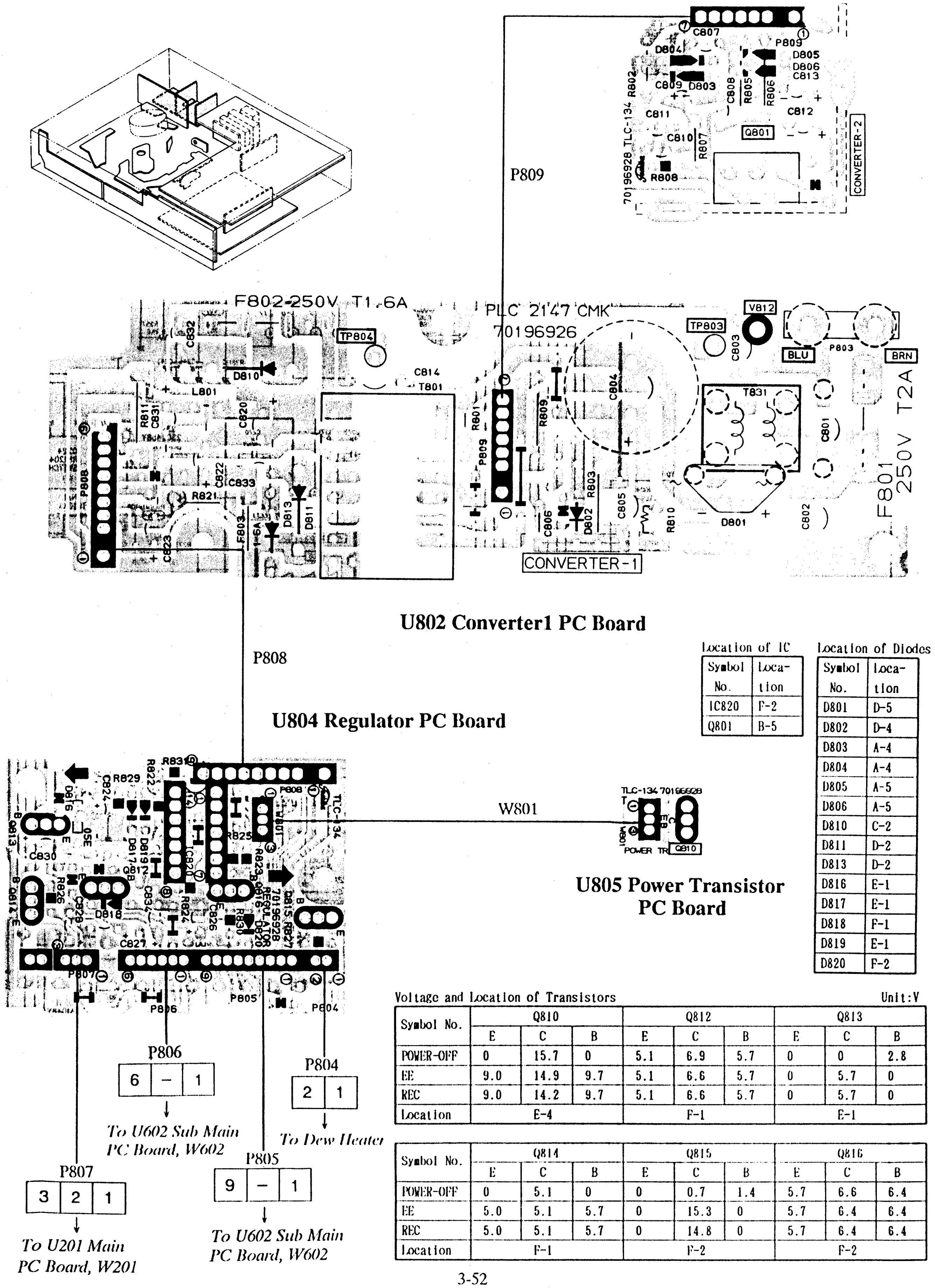

RA RB RC
KEY IN
TIMING GE
OSC
GND OSC
C4 0.1μ
R2 180
3.0V

8-7. Remote Cotntrol Circuit Diagram


VTR KEY MATRIX
S0
S1
S2
S3
S4
S5
S6
S7
7
ON /STANDBY
TIME SEARCH
1
8
PAUSE /STILL
CHANNEL UP
ZERO RETURN
2
9
REW/REV
OTR
3
0
FF/CUE
X2
4
STOP
SLOW (1/12)
SP /LP.EP
COUNTER RESET
5
PLAY
CHANNEL DOWN
INDEX
6
SLOW (1/6)
REMAIN /CLOCK
DT
REC
TIMER
TRACKING UP
TRACKING DOWN
PICTURE SHARP
PICTURE SOFT
K0
K1
K2
K3
RA
RB
RC
RD
③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩
RA RB RC RD K0 K1 K2 K3
⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱
S0 S1 S2 S3 S4 S5 S6 S7
KEY INPUT CIRCUIT
TIMING GENERATOR CIRCUIT
DIVIDER
OSC CIRCUIT
KEY OUTPUT CIRCUIT
DATA REGISTER
CONTROL CIRCUIT
OUTPUT CIRCUIT
GND
OSC 1
OSC 2
VDD
INIT
OUT
②
㉑
⑳
㉒
①
⑲
IC01
BU 5786F
C4 0.1μ
R2 180
ZT01 (455KHz)
C2 0.1μ
LED1
SLR932A-1-A
3.0V
C3 0.1μ
C1 47μ/6.3V
Q1
2SC2673
or
2SC4040

9. PC Boards

9-1. Power Supply PC Board


U803 Converter2 PC Board
CONVERTER-2
P809
C807
D804
D805
D806
C813
C809
D803
C808
R805
R806
C811
C812
C810
R807
Q801
R808
TLC-134
70196928
F802 250V T1.6A
PLC 2147 CMK
70196926
TP804
TP803
VB12
BLU
BRN
C832
D810
L801
C814
T801
T831
C804
C803
R801
R809
R803
C805
C806
D802
R810
D801
C801
C802
F801 250V T2A
R811
C831
C820
C822
C833
R821
D813
D811
C823
F803
P808
CONVERTER-1
U802 Converter1 PC Board
P808
U804 Regulator PC Board
R831
R829
R822
D816
D817
D818
D819
C830
R826
R825
R823
C827
P807
P806
P805
P804
W801
TLC-134 70196928
POWER TR
Q810
U805 Power Transistor PC Board
P806
6 – 1
To U602 Sub Main PC Board, W602
P804
2 1
To Dew Heater
P807
3 2 1
To U201 Main PC Board, W201
P805
9 – 1
To U602 Sub Main PC Board, W602

Location of IC

Symbol No.	Location
IC820	F-2
Q801	B-5

Location of Diodes

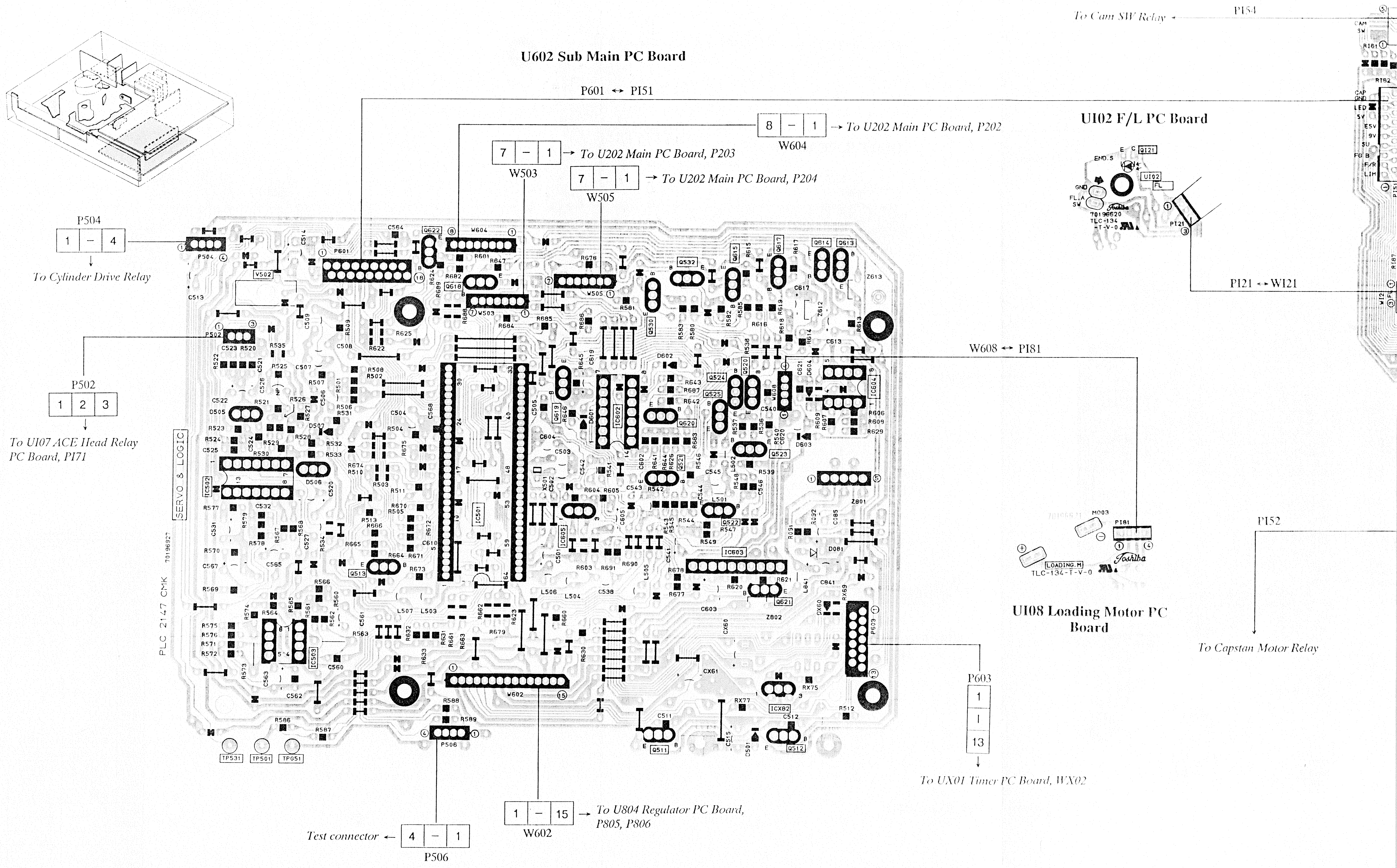
Symbol No.	Location
D801	D-5
D802	D-4
D803	A-4
D804	A-4
D805	A-5
D806	A-5
D810	C-2
D811	D-2
D813	D-2
D816	E-1
D817	E-1
D818	F-1
D819	E-1
D820	F-2

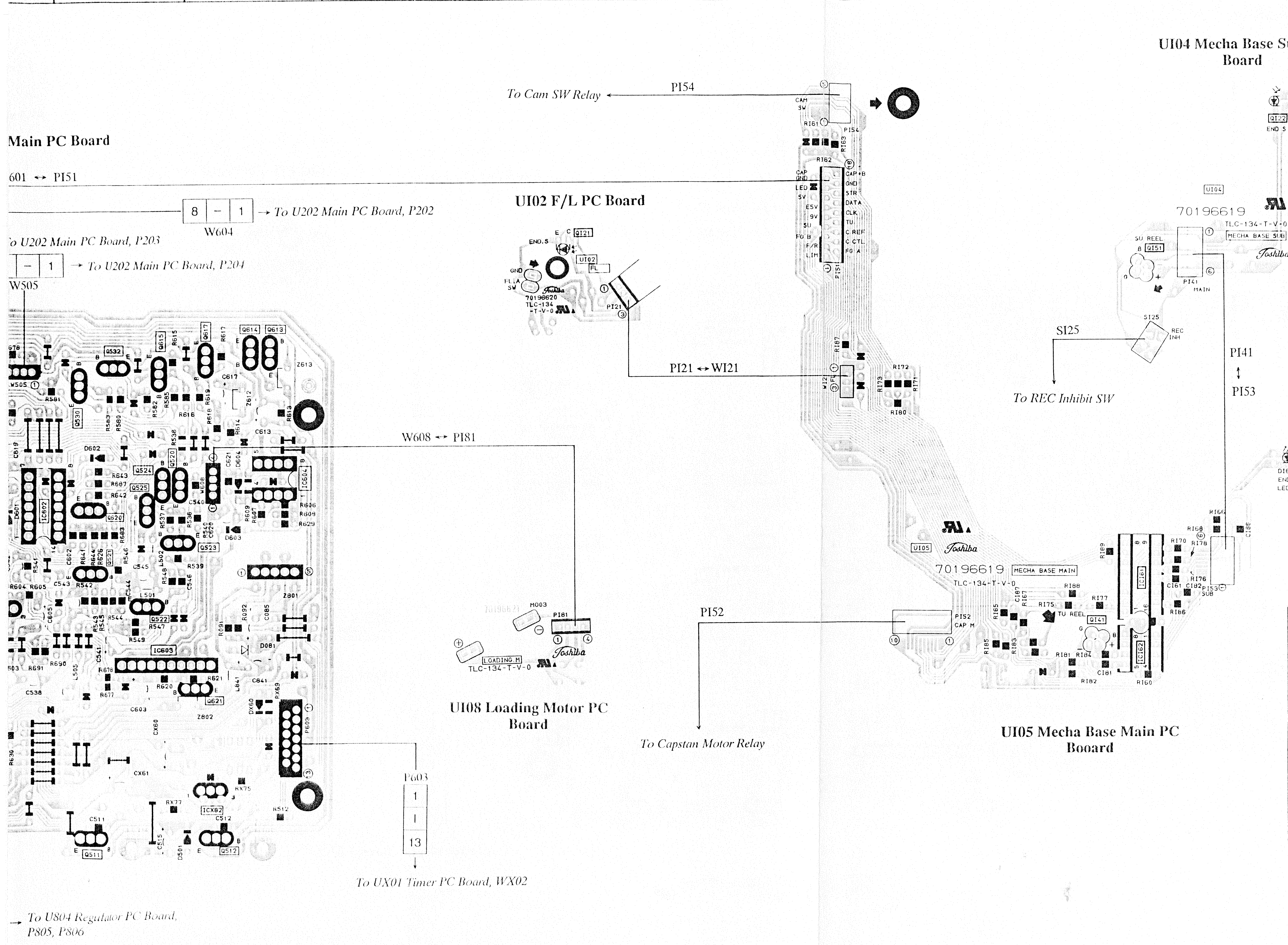
Voltage and Location of Transistors Unit:V

Symbol No.	Q810			Q812			Q813		
	E	C	B	E	C	B	E	C	B
POWER-OFF	0	15.7	0	5.1	6.9	5.7	0	0	2.8
EE	9.0	14.9	9.7	5.1	6.6	5.7	0	5.7	0
REC	9.0	14.2	9.7	5.1	6.6	5.7	0	5.7	0
Location	E-4			F-1			E-1		

Symbol No.	Q814			Q815			Q816		
	E	C	B	E	C	B	E	C	B
POWER-OFF	0	5.1	0	0	0.7	1.4	5.7	6.6	6.4
EE	5.0	5.1	5.7	0	15.3	0	5.7	6.4	6.4
REC	5.0	5.1	5.7	0	14.8	0	5.7	6.4	6.4
Location	F-1			F-2			F-2		

9-2. Sub Main (Logic/Servo) PC Board


U602 Sub Main PC Board
P601 ↔ PI51
8 – 1 → To U202 Main PC Board, P202
W604
7 – 1 → To U202 Main PC Board, P203
W503
7 – 1 → To U202 Main PC Board, P204
W505
P504
1 – 4
To Cylinder Drive Relay
P502
1 2 3
To UI07 ACE Head Relay PC Board, PI71
SERVO & LOGIC
PLC 2147 CMK
70196927
W608 ↔ PI81
P603
1
13
To UX01 Timer PC Board, WX02
1 – 15 → To U804 Regulator PC Board, P805, P806
W602
Test connector ← 4 – 1
P506
TP531
TP501
TP651
To Cam SW Relay
PI54
UI02 F/L PC Board
PI21 ↔ WI21
UI08 Loading Motor PC Board
LOADING.M
TLC-134-T-V-0
PI52
To Capstan Motor Relay


6
7
8
9
10
11
12
13
14
15
Main PC Board
601 ↔ PI51
8 | – | 1 → To U202 Main PC Board, P202
W604
To U202 Main PC Board, P203
| – | 1 → To U202 Main PC Board, P204
W505
To Cam SW Relay
PI54
UI02 F/L PC Board
PI21 ↔ WI21
W608 ↔ PI81
UI04 Mecha Base Sub PC Board
70196619
TLC-134-T-V-0
MECHA BASE SUB
SI25
To REC Inhibit SW
PI41
PI53
PI52
To Capstan Motor Relay
UI05
70196619
MECHA BASE MAIN
TLC-134-T-V-0
UI05 Mecha Base Main PC Booard
UI08 Loading Motor PC Board
LOADING M
TLC-134-T-V-0
70196620
TLC-134
-T-V-0
P603
1
1
13
To UX01 Timer PC Board, WX02
To U804 Regulator PC Board, P805, P806

Location of ICs

Sym-bol	Loca-tion
IC161	E-14
IC162	E-14
ICX82	F-7
IC501	E-4
IC502	E-2
IC503	F-3
IC602	D-6
IC603	E-6
IC604	D-7
IC605	E-5

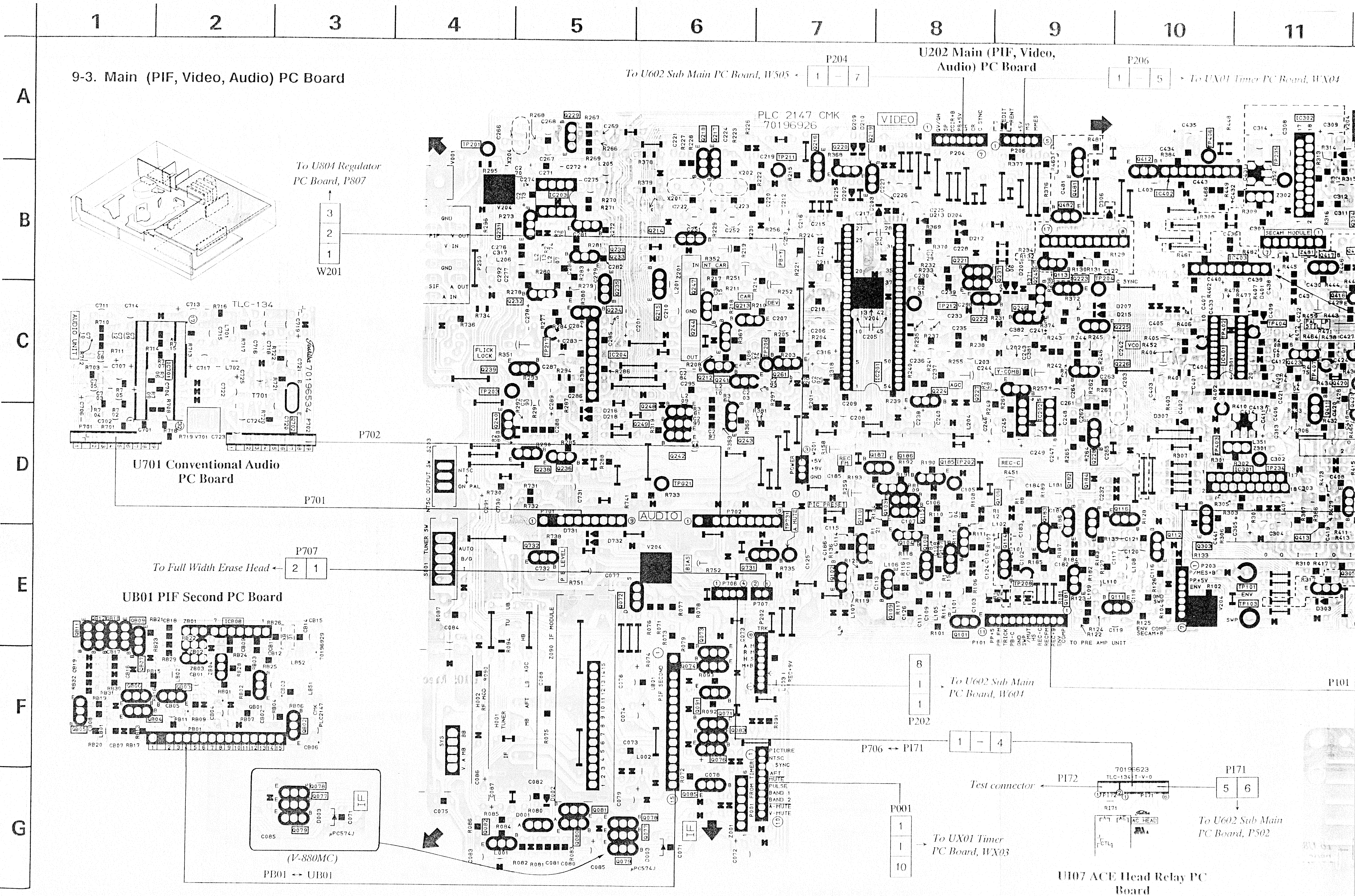
Location of Diodes

Sym-bol	Loca-tion
D090	
D091	
D501	G-6
D505	D-2
D506	E-3
D507	D-3
D602	D-6
D603	D-7
D604	D-7
D161	D-15
DX60	F-7

Location of Transistors

Sym-bol	Voltate (Unit:V)			Loca-tion
	E	C	B	
Q090	36.8	32.2	36.2	
Q511	12.0	17.0	13.4	G-6
Q512	12.0	17.0	13.4	G-7
Q513	0	0	5.0	E-3
Q520	0	0	0	D-6
Q521	0(1.9)	5.0	0.6	D-6
Q522	0	3.7	0.9	E-6
Q523	0	5.0	0	D-7
Q524	0	0	4.5	D-6
Q525	3.6	3.6	3.0	D-6
Q530	5.0			C-6
Q532	5.0	4.8	0	C-6
Q613	9.1(9.1)	0.2(8.4)	8.6(8.4)	C-7
Q614	8.6(8.4)	0.2(8.4)	9.1(7.7)	C-7
Q615	5.0(5.1)	5.0(0.2)	4.3(5.1)	C-6
Q617	5.0(5.1)	5.0(0.1)	4.3(5.1)	C-7
Q618	0(0)	0(5.1)	0(5.2)	C-4
Q619	0	5.0	0	D-5
Q620	4.3	0	0.5	D-6
Q621	0	11.9	0	F-7
Q622	0	0	5.0	C-4
Q121				B-9
Q122				A-15
Q141				E-12
Q151				B-14

9-3. Main (PIF, Video, Audio) PC Board


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
U202 Main (PIF, Video, Audio) PC Board
P204
To U602 Sub Main PC Board, W505
1 - 7
P206
1 - 5
To UX01 Timer PC Board, WX04
PLC 2147 CMK
70196926
VIDEO
AUDIO
To U804 Regulator PC Board, P807
3
2
1
W201
GND
PIF V OUT
V IN
GND
SIF A OUT
A IN
TLC-134
70196534
U701 Conventional Audio PC Board
P702
P701
P707
To Full Width Erase Head
2
1
UB01 PIF Second PC Board
(V-880MC)
PB01 ↔ UB01
IF MODULE
PIF SECOND
TUNER SW
NTSC OUTPUT SW
SECAM MODULE
8
1
1
P202
To U602 Sub Main PC Board, W604
P706 ↔ P171
1 - 4
P001
1
1
10
To UX01 Timer PC Board, WX03
Test connector
P172
70196623
TLC-134-T-V-0
P171
5
6
To U602 Sub Main PC Board, P502
U107 ACE Head Relay PC Board
TO PRE AMP UNIT
P101

6	7	8	9	10	11	12	13	14	15	16

U202 Main (PIF, Video, Audio) PC Board

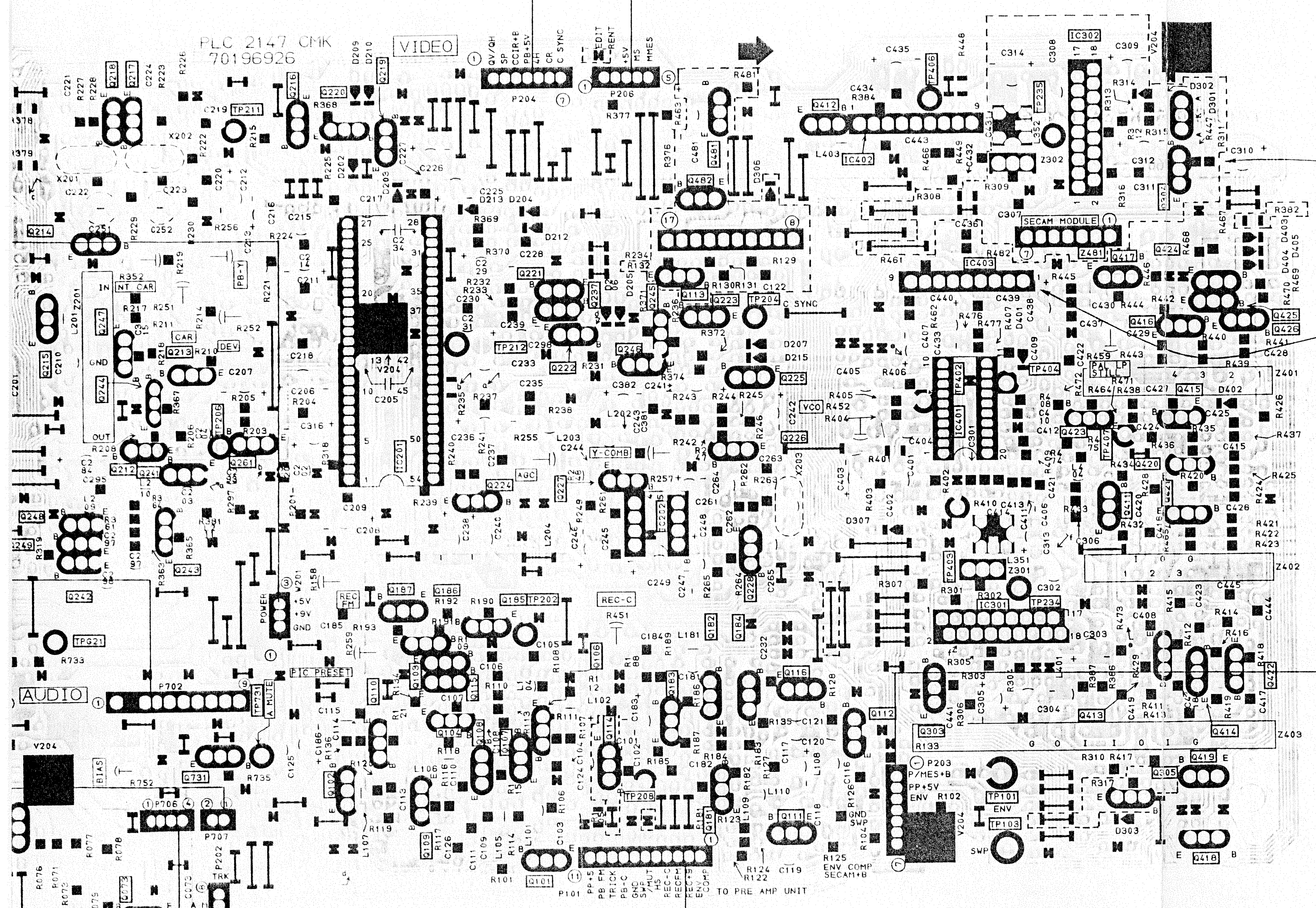
P204

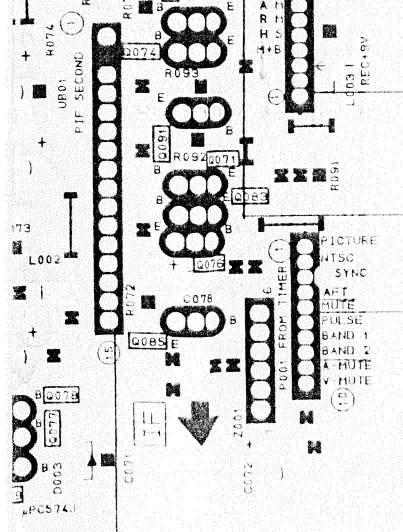
U602 Sub Main PC Board, W505 ← 1 - 7

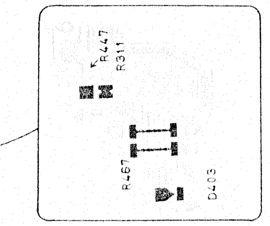
P206

1 - 5 → To UX01 Timer PC Board, WX04

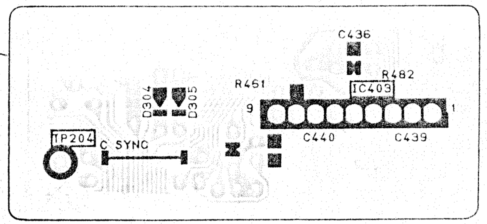
parts are only for V-880MS.


PLC 2147 CMK
70196926
VIDEO
AUDIO
SECAM MODULE
P204
P206
P203
P702
P706
P707
P101
TO PRE AMP UNIT
POWER
PIC PRESET


PIF SECOND
PICTURE
NTSC
SYNC
AFT
MUTE
PULSE
BAND 1
BAND 2
A MUTE
V MUTE
P600 FROM TIMER



(V-880MC)



(V-880MC)

P203

1
1
7

→ To U602 Sub Main PC Board, W503

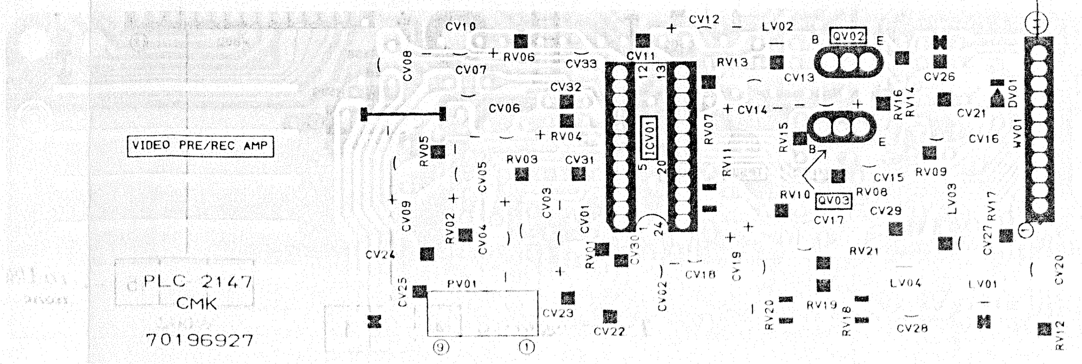
8
1
1

P202

To U602 Sub Main PC Board, W604

P101 ↔ WV01

UV01 Pre Amp PC Board


VIDEO PRE/REC AMP
PLC 2147 CMK
70196927

P706 ↔ P171

1 - 4

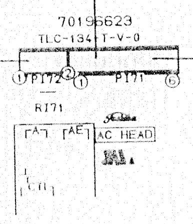
P171

5 | 6

To U602 Sub Main PC Board, P502

P172

Test connector


70196623
TLC-134-T-V-0
P172
P171
R171
FAT
AE
AC HEAD

P001

1
1
10

To UX01 Timer PC Board, WX03

U107 ACE Head Relay PC Board

Location of Transistors

V : REC. (V) : PLAY

Sym-bol	Voltage (Unit:V)			Loca-tion
	E	C	B	
Q101	0(0)	6.5～ 4.0 (0.1～ 2.5)	0(0)	E-8
Q102	0(0)	0(0)	0 (2.5)	E-7
Q103	0	0		D-8
Q104	0	0		E-8
Q106	0(1.6)	0(3.3)	0(2.3)	D-9
Q107	0(3.9)	0(1.3)	0(3.3)	E-8
Q108	0(3.2)	0(4.9)	0(3.9)	E-8
Q109	0(2.3)	(0)	0(1.6)	E-8
Q110	0(1.6)	0(4.9)	0(2.3)	D-7
Q111	0(0.5)	0(4.9)	0(1.2)	E-10
Q112	0(4.9)	0(4.9)	0(0)	E-10
Q113**	0(0.6)	0(2.6)	0(1.2)	B-9
Q114**	0(0)	0(0)	4.5(4.5)	E-9
Q115	0(0)	0(0)		D-8
Q116	0(4.2)	0(4.9)	0(4.9)	D-10
Q181	(0)	0(0)	(0)	E-9
Q182	1.1(0)	8.0(0)	1.8(0)	D-9
Q183	1.8(0)	6.3(0)	2.5(0)	D-9
Q184	0(0)	(0)		D-9
Q185		0(0)	(0)	D-8
Q186	0(0)	(0)		D-8
Q187	1.4(0)	0(0)	0.7(1.1)	D-8
Q212	0			C-6
Q213	1.6(1.9)	0(0)	0.9(1.3)	C-6
Q214	0(0)			B-6
Q215	0(0)	0(0)		C-6
Q216	0(0)	0～ 2.7 (0～ 2.7)	0(0)	A-7
Q217	1.3(1.3)	5.0(5.0)	2.0(2.0)	A-6
Q218	1.3(1.3)	5.0(5.0)	0.3(0.3)	A-6
Q219	0(0)	3.0(3.0)	0(0)	A-7
Q220	0(0)	0(0)	4.4(4.4)	A-7
Q221	0	4.9～ 0.1 (4.9～ 0.1)	0.1～ 1.8 (0.1～ 1.8)	B-8
Q222	0(0)	0(0)	0(4.1)	D-8
Q223	0(0)		0(0)	B-9
Q224	0(0)		0(0)	D-8
Q225	4.0(4.0)	1.4(1.4)	3.3(3.3)	C-10
Q226	2.4(2.4)	0(0)	1.7(1.7)	C-10
Q227	2.7(2.7)	5.0(5.0)	3.4(3.4)	D-8
Q228	0.5(0.5)	1.2(1.2)	1.1(1.1)	D-9
Q229	0(0.5)	0.1(1.2)	0.1(1.1)	A-5
Q230	0.1(1.3)	0(0)	1.6(1.6)	B-5
Q231	0(2.7)	0(4.8)	0(3.4)	B-4
Q232	8.0(8.0)	2.0(2.0)	7.3(7.3)	C-5
Q233	1.3(1.3)	6.8(6.8)	2.0(2.0)	B-5
Q234	6.1(6.1)	8.7(8.7)	6.8(6.8)	C-5
Q235	0(0)	0(0)	0(0)	C-5
Q236	4.5(0)	7.2(7.2)	4.9(0)	D-5
Q237	0(0)	0(4.1)	8.0(0)	B-9
Q238	0(0)	4.5(0)	0(4.9)	D-5
Q239	4.2(4.2)	0(0)	3.5(3.5)	C-4
Q240	5.8(5.8)	8.7(8.7)	6.5(6.5)	D-4
Q241	1.8(1.8)	0(0)	1.1(1.1)	C-6
Q242	0(0)	0(0)		D-6
Q243	1.1(1.1)	4.9(4.9)	1.8(1.8)	D-6
Q244	0(0)	0(2.4)	0(0)	C-6
Q245	0(0)	0.7(0)	0.1(4.8)	B-9
Q246	0(0)	0(2.6)	0.7(0)	C-9
Q247	0(0)	0(0)	0(4.9)	C-6
Q248	0(0)	4.5(4.5)	0(0)	
Q249	0(0)	0(0)	4.5(4.5)	D-6
Q261	1.8(2.3)	5.0(5.0)	2.4(2.9)	C-7
Q303	0(0)	0(0)		E-10
Q304**	0(0)	0(0)		B-12
Q305**	0(0)	4.5(4.5)	0(0)	E-12
Q411	1.7(1.7)	5.0(5.0)	2.3(2.3)	C-11
Q412	2.9(2.9)	0(0)	2.2(2.2)	A-10
Q413	2.5(2.5)	5.0(5.0)	3.2(3.2)	E-11
Q414	0.8(0.8)	3.2(3.2)	1.5(1.5)	E-12
Q415		5.0(5.0)	2.0(2.0)	C-12
Q416	1.0(1.0.)	2.8(2.8)	1.7(1.7)	C-11
Q417	3.4(3.4)	1.5(1.5)	2.8(2.8)	B-11
Q418	5.0(5.0)			E-12
Q419				E-12
Q420	1.5(1.5)	5.0(5.0)	0(0)	C-11
Q421	1.5(1.5)	5.0(5.0)	0(0)	C-12
Q422	1.5(1.5)	5.0(5.0)	2.1(2.1)	D-12
Q423	1.7(1.7)	5.0(5.0)	2.3(2.3)	C-11
Q424	0(0)			B-12
Q425	0(0)	0～ 4.6 (0 ～ 4.6)	0～ 4.0 (0 ～ 4.0)	C-12
Q426	0～ 4.0 (0 ～ 4.0)	5.0(5.0)	0～ 4.6 (0 ～ 4.6)	C-12
Q481**	4.9(0.4)	5.0(5.0)	5.6(0)	B-9
Q482**	0(1.6)	5.0(5.0)	0(2.2)	B-9
Q702	0(0)	6.7(0)	-0.7(0)	D-3
Q731	0(0)	7.9(0)	0(3.2)	E-7
QV02	0(1.8)	0.3(5.0)	0(2.5)	F-14
QV03	0(2.3)	0.3(5.0)	0(2.9)	G-14

The symbol ** shows the parts only for V-880MS.

V : PAL SECAM. (V) : NTSC

Sym-bol	Voltage (Unit:V)			Loca-tion
	E	C	B	
Q104			0(4.9)	E-8
Q214		REC: 2.2(0) PLAY: 3.6(0)	0(4.9)	B-6
Q215			0(4.9)	C-6
Q242			0(4.9)	D-6
Q303			0(4.3)	E-10
Q304**			0(4.4)	B-12
Q415	4.3(1.4)			C-12
Q418		0(4.9)	4.9(0.3)	E-12
Q419	0	0	0	E-12

The symbol ** shows the part only for V-880MS.

V : PAL SECAM SP. (V) : PAL SECAM LP

Sym-bol	Voltage (Unit:V)			Loca-tion
	E	C	B	
Q223		3.4(3.8)		B-9

V : NTSC SP. (V) : NTSC LP. <V> : NTSC EP

Sym-bol	Voltage (Unit:V)			Loca-tion
	E	C	B	
Q216		0	4.6	A-7
Q220		4.6	0	A-7
Q222			0	D-8
Q223		2.5<3.4>		B-9
Q224	(0)	(0)	(4.9)	D-8
Q237		PLAY: 0		B-9

V : REC EE

Sym-bol	Voltage (Unit:V)			Loca-tion
	E	C	B	
Q101		0	2.3	E-8
Q102		2.3		E-7
Q238		0		D-5
Q481**	0.4		0	B-9

The symbol ** shows the part only for V-880MS.

V:SECAM (V):MESECAM

Sym-bol	Voltage (Unit:V)			Loca-tion
	E	C	B	
Q112			(4.2)	E-10
Q114			0	E-9
Q219		0(0)	3.8(3.8)	A-7
Q305		0	4.2	E-12

V : SP. (V) : EXCEPT FOR SP

Sym-bol	Voltage (Unit:V)			Loca-tion
	E	C	B	
Q103			0(4.9)	D-8
Q115			0(4.9)	D-8
Q181	REC: 1.8(1.6)		REC: 1.1(0.9)	E-9
Q184		REC: 1.1(0)	0(4.9)	D-9
Q185	REC: 2.1(1.7)		REC: 1.4(1.0)	D-8
Q186		REC: 1.4(0)	0(4.9)	D-8
Q212		PLAY: 2.4(0)	0(4.9)	C-6
Q224		0.1(4.9)		D-8
Q424		4.6～ 4.0(0)	(0.7)	B-12

V : 3.58NTSC. (V) : 4.43NTSC. <V> : 3.58/4.43NTSC

Sym-bol	Voltage (Unit:V)			Loca-tion
	E	C	B	
Q217	3.2			A-6
Q218	3.2			A-6
Q219	3.2		3.9	A-7
Q235			5.0	C-5
Q419	<4.9>	0(4.9)	5.0(0.3)	E-12
Q420	3.2(3.1)		0(3.8)	C-11
Q421	3.2(3.1)		3.9(0.3)	C-12
Q422	3.2(3.1)		<2.2>	D-12

Sym-bol	Voltate (Unit:V)			Loca-tion
	E	C	B	
Q072				E-5
Q073				E-6
Q074				F-6
Q082				G-4
Q083				F-6
Q091				F-6
QB01	7.7	0.01	7.4	F-2
QB02	8.2	9.0	9.1	F-3
QB03	0	0.01	0.7	F-2
QB04				F-2
QB05	1.7	6.0	2.4	F-1
QB06	1.1	0	0.8	F-1
QB07	5.3	9.0	6.0	E-1

BAND SW V:VL.(V):VH.<V>:U

Sym-bol	Voltate (Unit:V)			Loca-tion
	E	C	B	
Q077	0(0)<0>	0(9)<9>	5(0)<0>	G-6
Q078	9(9)<9>	9(0)<0>	0(9)<9>	G-6
Q079	0(0)<0>	9(0)<9>	0(2)<0>	G-5
Q080	9(9)<9>	0(9)<0>	9(0)<9>	G-5
Q081	9(9)<9>	0(0)<9>	8.6(8.6)<4.7>	G-5

TUNER SW (SIF SW) V:AUTO.(V):B/G.<V>:I

Sym-bol	Voltate (Unit:V)			Loca-tion
	E	C	B	
QB09	0(0)<0>	0(0)<0>	0(7.4)<0>	E-1
QB10	0(0)<0>	0(0)<0>	0(7.4)<0>	E-1
QB11	0(0)<0>	0(0)<0>	0(0)<7.4>	E-1
QB12	0(0)<0>	0(0)<0>	0(0)<7.4>	E-1

NTSC SW V:NTSC3.58.(V):Other

Sym-bol	Voltate (Unit:V)			Loca-tion
	E	C	B	
Q071	0(0)	0(5)	3.5(0)	F-6
Q083	5(5)	5(0)	0(5)	F-6

V: MUTE ON. (V): MUTE OFF

Sym-bol	Voltate (Unit:V)			Loca-tion
	E	C	B	
Q076	5.0(5.0)	5.0(0)	0.1(5.0)	F-6
Q085	0(0)	0(1.8)	0.7(1.5)	G-6

Location of IC's

Sym-bol	Loca-tion
ICB08	E-2
IC201	C-7
IC202	D-9
IC203	B-5
IC204	C-5
IC301	D-11
IC302**	A-11
IC401	C-10
IC402	B-10
IC403	B-11
IC701	C-2
ICV01	G-14

Location of Adjusting VRs

Sym-bol	Loca-tion
R251	B-6
R252	C-7
R255	C-8
R256	B-7
R257	D-9
R259	D-7
R351	C-4
R352	B-6
R451	D-9
R459	C-11
R751	E-5
R752	E-6

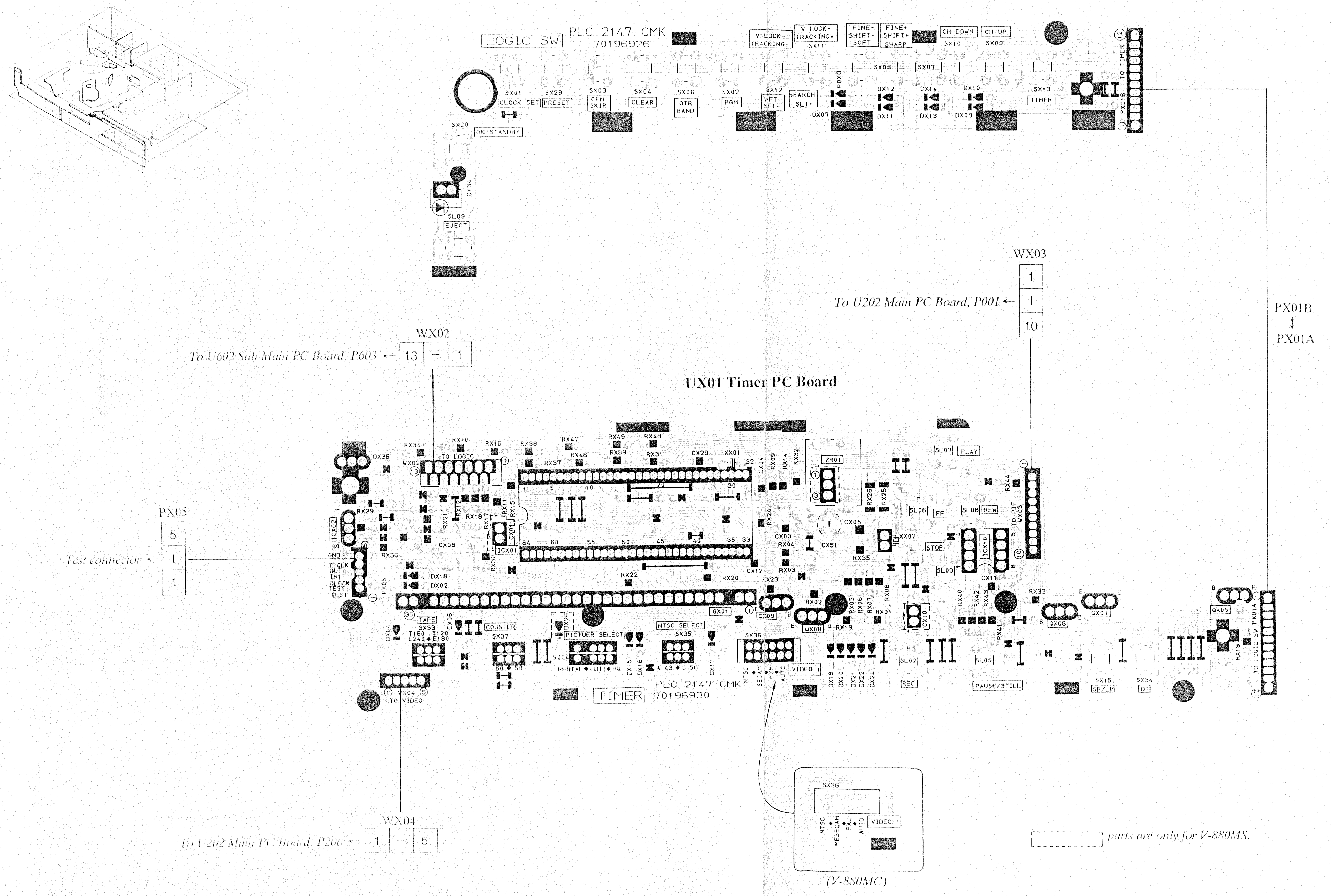
The symbol ** shows the part only for V-880MS.

Location of Diodes

Sym-bol	Loca-tion
D001	
D002	G-4
D003	G-5
D202	B-7
D203	B-7
D204	B-8
D205	B-9
D206	B-9
D207	C-10
D209	A-7
D210	A-7
D212	B-8
D213	B-8
D215	C-10
D216	D-8
D218	D-8
D301**	A-12
D302**	A-12
D303	E-11
D304*	C-14
D305*	C-14
D306**	B-9
D307	D-10
D401	C-11
D402	C-12
D403	A-12
D404	A-12
D467	

The symbol* shows the parts only for V-880MC.
The symbol* * shows the parts only for V-880MS.

9-4. Timer PC Board


UL01 Logic SW PC Board
LOGIC SW
PLC 2147 CMK
70196926
ON/STANDBY
EJECT
TO TIMER
PX01B
↕
PX01A
WX03
1
|
10
To U202 Main PC Board, P001 ←
WX02
13
–
1
To U602 Sub Main PC Board, P603 ←
UX01 Timer PC Board
PX05
5
|
1
Test connector ←
TIMER
PLC 2147 CMK
70196930
TO LOGIC
TO PIF
TO VIDEO
TO LOGIC SW
WX04
1
–
5
To U202 Main PC Board, P206 ←
SX36
NTSC
MESECAM
PAL
AUTO
VIDEO 1
(V-880MC)
parts are only for V-880MS.

Location of ICs

Sym-bol	Loca-tion
ICX01	E-4
ICX02	E-3
ICX10	E-8

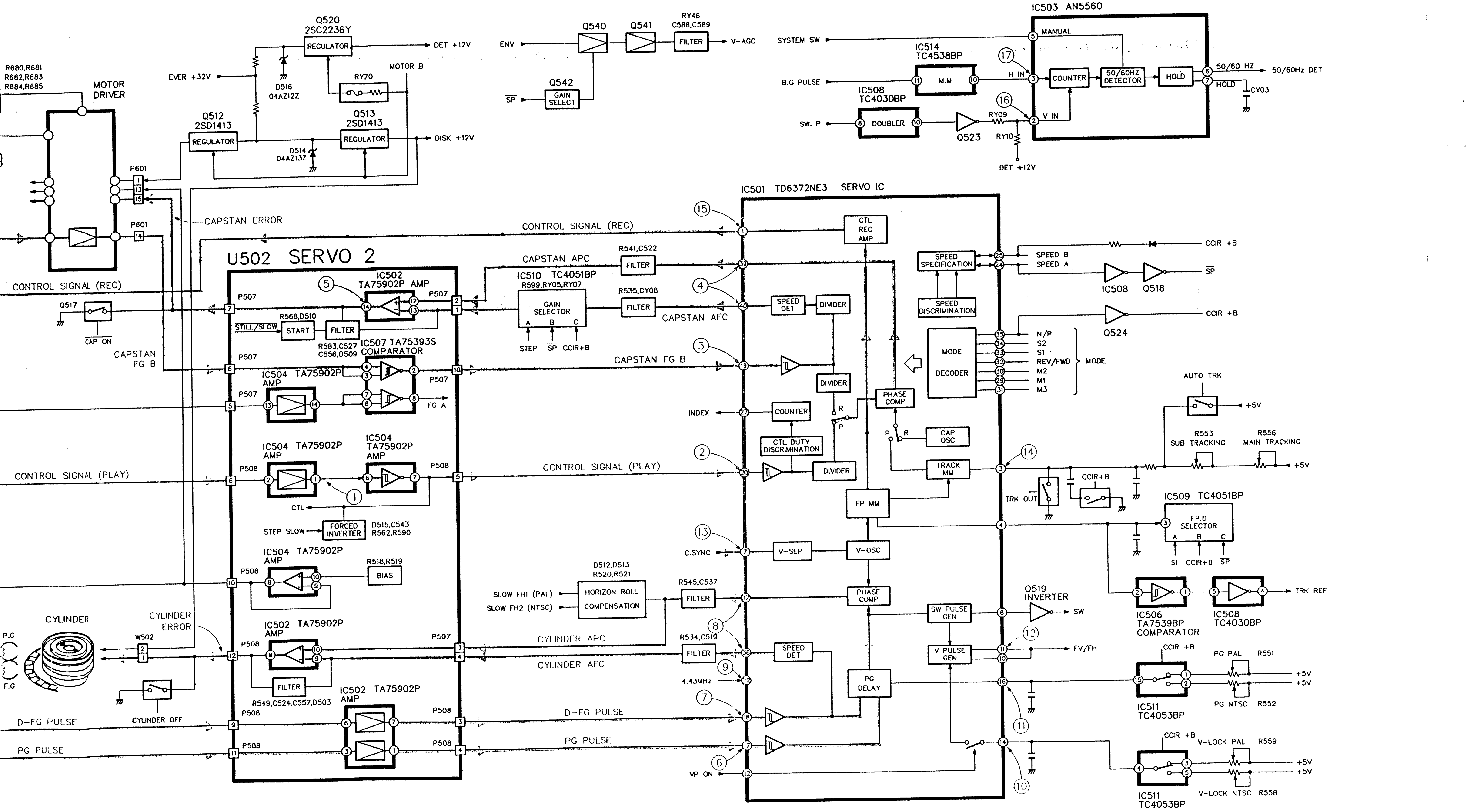
Location of Diodes

Sym-bol	Loca-tion
DX02	E-4
DX04	F-3
DX06	F-4
DX07	B-7
DX08	B-7
DX09	B-8
DX10	B-8
DX11	B-7
DX12	B-7
DX13	B-7
DX14	B-7
DX15	F-5
DX16	F-5
DX17	F-6
DX18	E-4
DX19	F-7
DX20	F-7
DX21	F-7
DX22	F-7
DX24	F-7
DX26**	F-5
DX34	C-4
DX36	E-3

** shows parts only for V-880MS.

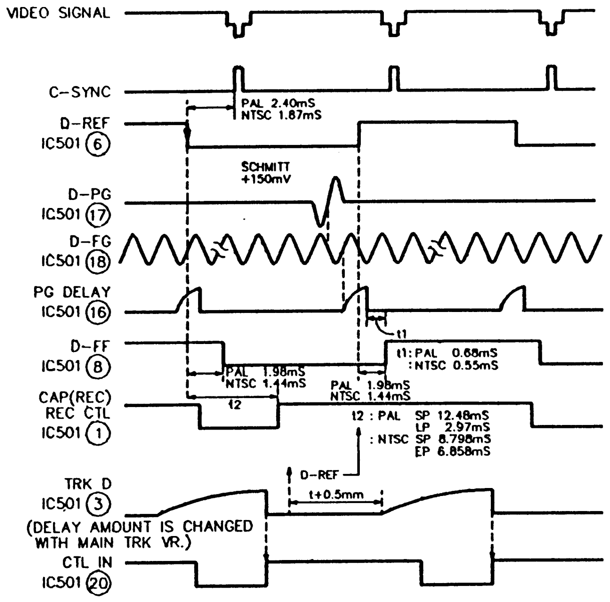
Location of Transistors

Sym-bol	Voltate (Unit:V)			Loca-tion
	E	C	B	
QX05	5.0	4.9	0.5	F-9
QX06	5.0		5.0	F-6
QX07	-1.2	8.3		F-9
QX08		5.0		F-7
QX09		5.0		F-6

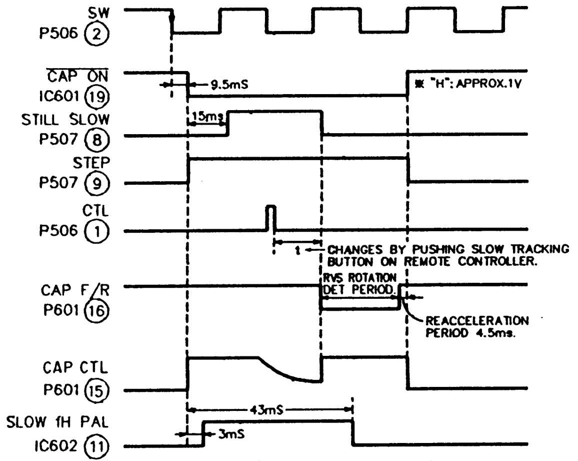


IC503 AN5560
MANUAL
SYSTEM SW
IC514 TC4538BP
M.M
B.G PULSE
H IN
COUNTER
50/60HZ DETECTOR
HOLD
50/60 HZ
50/60Hz DET
HOLD
CY03
IC508 TC4030BP
DOUBLER
SW. P
Q523
RY09
RY10
V IN
DET +12V
Q520 2SC2236Y
REGULATOR
DET +12V
MOTOR B
RY70
EVER +32V
D516 04AZ12Z
Q512 2SD1413
REGULATOR
Q513 2SD1413
REGULATOR
DISK +12V
D514 04AZ13Z
R680,R681 R682,R683 R684,R685
MOTOR DRIVER
P601
P601
CAPSTAN ERROR
Q540
Q541
RY46 C588,C589
FILTER
V-AGC
ENV
Q542
GAIN SELECT
SP
IC501 TD6372NE3 SERVO IC
CONTROL SIGNAL (REC)
CTL REC AMP
SPEED SPECIFICATION
SPEED DISCRIMINATION
SPEED B
SPEED A
CCIR +B
IC508
Q518
SP
Q524
CCIR +B
U502 SERVO 2
IC502 TA75902P AMP
P507
Q517
CAP ON
STILL/SLOW
START
FILTER
R568,D510
R583,C527 C556,D509
CAPSTAN APC
R541,C522
FILTER
IC510 TC4051BP
R599,RY05,RY07
GAIN SELECTOR
STEP
SP
CCIR+B
R535,CY08
FILTER
CAPSTAN AFC
SPEED DET
DIVIDER
MODE DECODER
N/P
S2
S1
REV/FWD
M2
M1
M3
MODE
IC507 TA75393S COMPARATOR
CAPSTAN FG B
CAPSTAN FG B
IC504 TA75902P AMP
FG A
DIVIDER
PHASE COMP
INDEX
COUNTER
CTL DUTY DISCRIMINATION
CAP OSC
TRACK MM
DIVIDER
AUTO TRK
+5V
R553 SUB TRACKING
R556 MAIN TRACKING
+5V
CONTROL SIGNAL (PLAY)
IC504 TA75902P AMP
IC504 TA75902P AMP
P508
CONTROL SIGNAL (PLAY)
CTL
STEP SLOW
FORCED INVERTER
D515,C543 R562,R590
FP MM
TRK OUT
CCIR+B
IC509 TC4051BP
FP.D SELECTOR
S1
CCIR+B
SP
C.SYNC
V-SEP
V-OSC
IC504 TA75902P AMP
R518,R519
BIAS
D512,D513 R520,R521
SLOW FH1 (PAL)
SLOW FH2 (NTSC)
HORIZON ROLL COMPENSATION
R545,C537
FILTER
PHASE COMP
SW PULSE GEN
Q519 INVERTER
SW
IC506 TA7539BP COMPARATOR
IC508 TC4030BP
TRK REF
CYLINDER
P.G
F.G
W502
CYLINDER ERROR
IC502 TA75902P AMP
CYLINDER APC
R534,C519
FILTER
SPEED DET
V PULSE GEN
FV/FH
CYLINDER AFC
FILTER
R549,C524,C557,D503
4.43MHz
PG DELAY
CCIR +B
PG PAL
R551
+5V
+5V
PG NTSC
R552
IC511 TC4053BP
CYLINDER OFF
IC502 TA75902P AMP
D-FG PULSE
D-FG PULSE
PG PULSE
PG PULSE
VP ON
CCIR +B
V-LOCK PAL
R559
+5V
+5V
V-LOCK NTSC
R558
IC511 TC4053BP
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮
⑯
⑰

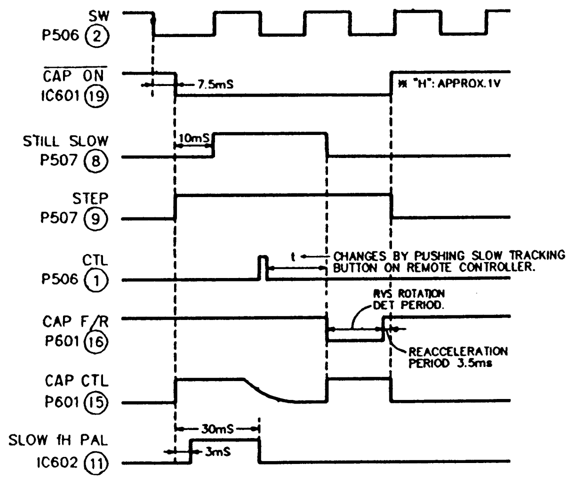
11-1. Servo Block Diagram


VIDEO SIGNAL
C-SYNC
D-REF IC501 ⑥
PAL 2.40mS
NTSC 1.87mS
SCHMITT +150mV
D-PG IC501 ⑰
D-FG IC501 ⑱
PG DELAY IC501 ⑯
t1
D-FF IC501 ⑧
PAL 1.98mS
NTSC 1.44mS
t1 : PAL 0.68mS
: NTSC 0.55mS
CAP(REC) REC CTL IC501 ①
t2
t2 : PAL SP 12.48mS
LP 2.97mS
: NTSC SP 8.798mS
EP 6.858mS
TRK D IC501 ③
D-REF
t+0.5mm
(DELAY AMOUNT IS CHANGED WITH MAIN TRK VR.)
CTL IN IC501 ⑳

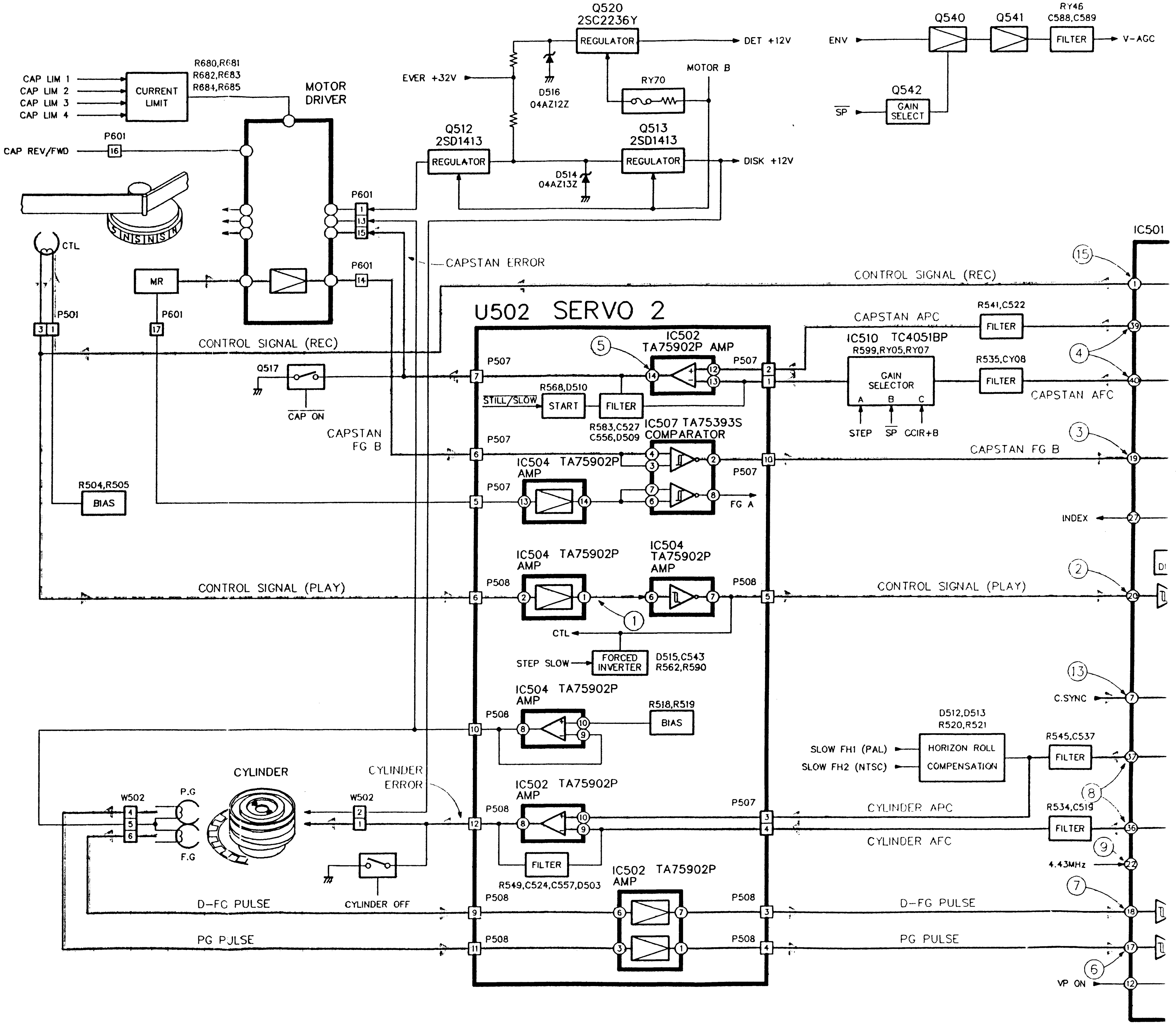
Servo IC Timing Chart


SW P506 ②
CAP ON IC601 ⑲
9.5mS
※ "H": APPROX.1V
STILL SLOW P507 ⑧
15mS
STEP P507 ⑨
CTL P506 ①
t
CHANGES BY PUSHING SLOW TRACKING BUTTON ON REMOTE CONTROLLER.
CAP F/R P601 ⑯
RVS ROTATION DET PERIOD.
REACCELERATION PERIOD 4.5ms.
CAP CTL P601 ⑮
SLOW fH PAL IC602 ⑪
43mS
3mS

Slow Timing Chart (SP)

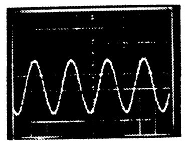

SW P506 ②
CAP ON IC601 ⑲
7.5mS
※ "H": APPROX.1V
STILL SLOW P507 ⑧
10mS
STEP P507 ⑨
CTL P506 ①
t
CHANGES BY PUSHING SLOW TRACKING BUTTON ON REMOTE CONTROLLER.
CAP F/R P601 ⑯
RVS ROTATION DET PERIOD.
REACCELERATION PERIOD 3.5ms
CAP CTL P601 ⑮
SLOW fH PAL IC602 ⑪
30mS
3mS

Slow Timing Chart (PAL LP)


Q520
2SC2236Y
REGULATOR
DET +12V
EVER +32V
D516
04AZ12Z
RY70
MOTOR B
Q512
2SD1413
REGULATOR
Q513
2SD1413
REGULATOR
DISK +12V
D514
04AZ13Z
ENV
Q540
Q541
RY46
C588,C589
FILTER
V-AGC
Q542
GAIN SELECT
SP
CAP LIM 1
CAP LIM 2
CAP LIM 3
CAP LIM 4
CURRENT LIMIT
R680,R681
R682,R683
R684,R685
MOTOR DRIVER
P601
CAP REV/FWD
16
P601
1
13
15
P601
14
CAPSTAN ERROR
CTL
MR
P501
3
1
P601
17
R504,R505
BIAS
CONTROL SIGNAL (REC)
Q517
CAP ON
CAPSTAN FG B
U502 SERVO 2
IC502
TA75902P AMP
P507
STILL/SLOW
START
R568,D510
FILTER
R583,C527
C556,D509
IC507 TA75393S
COMPARATOR
IC504 TA75902P
AMP
FG A
IC504 TA75902P
AMP
IC504
TA75902P
AMP
P508
CONTROL SIGNAL (PLAY)
CTL
STEP SLOW
FORCED INVERTER
D515,C543
R562,R590
IC504 TA75902P
AMP
R518,R519
BIAS
CYLINDER
CYLINDER ERROR
W502
P.G
F.G
IC502 TA75902P
AMP
FILTER
R549,C524,C557,D503
CYLINDER OFF
IC502 TA75902P
AMP
D-FG PULSE
PG PULSE
IC501
CONTROL SIGNAL (REC)
CAPSTAN APC
R541,C522
FILTER
IC510 TC4051BP
R599,RY05,RY07
GAIN SELECTOR
A B C
STEP
SP
CCIR+B
R535,CY08
FILTER
CAPSTAN AFC
CAPSTAN FG B
INDEX
CONTROL SIGNAL (PLAY)
C.SYNC
D512,D513
R520,R521
SLOW FH1 (PAL)
SLOW FH2 (NTSC)
HORIZON ROLL COMPENSATION
R545,C537
FILTER
CYLINDER APC
R534,C519
FILTER
CYLINDER AFC
4.43MHz
D-FG PULSE
PG PULSE
VP ON
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑬
⑮

10-1. Logic Block Diagram

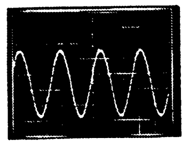
① IC601, Pin (50)
IC602, Pin (50)



(EE)

V: 1V/div.
H: 50 µs/div.

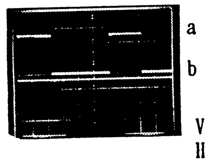
② IC601, Pin (51)
IC602, Pin (51)



(EE)

V: 1V/div.
H: 0.1µs/div.

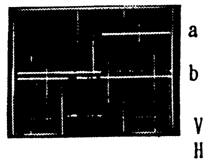
③ a: IC601, Pin (48)
b: IC601, Pin (59)



(EE)

V: 1V/div.
H: 50 µs/div.

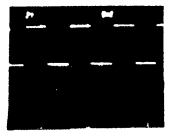
④ a: IC601, Pin ③
b: IC601, Pin ④



(EE)

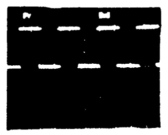
V: 2V/div.
H: 0.5ms/div.

⑤ IC601, Pin (54)

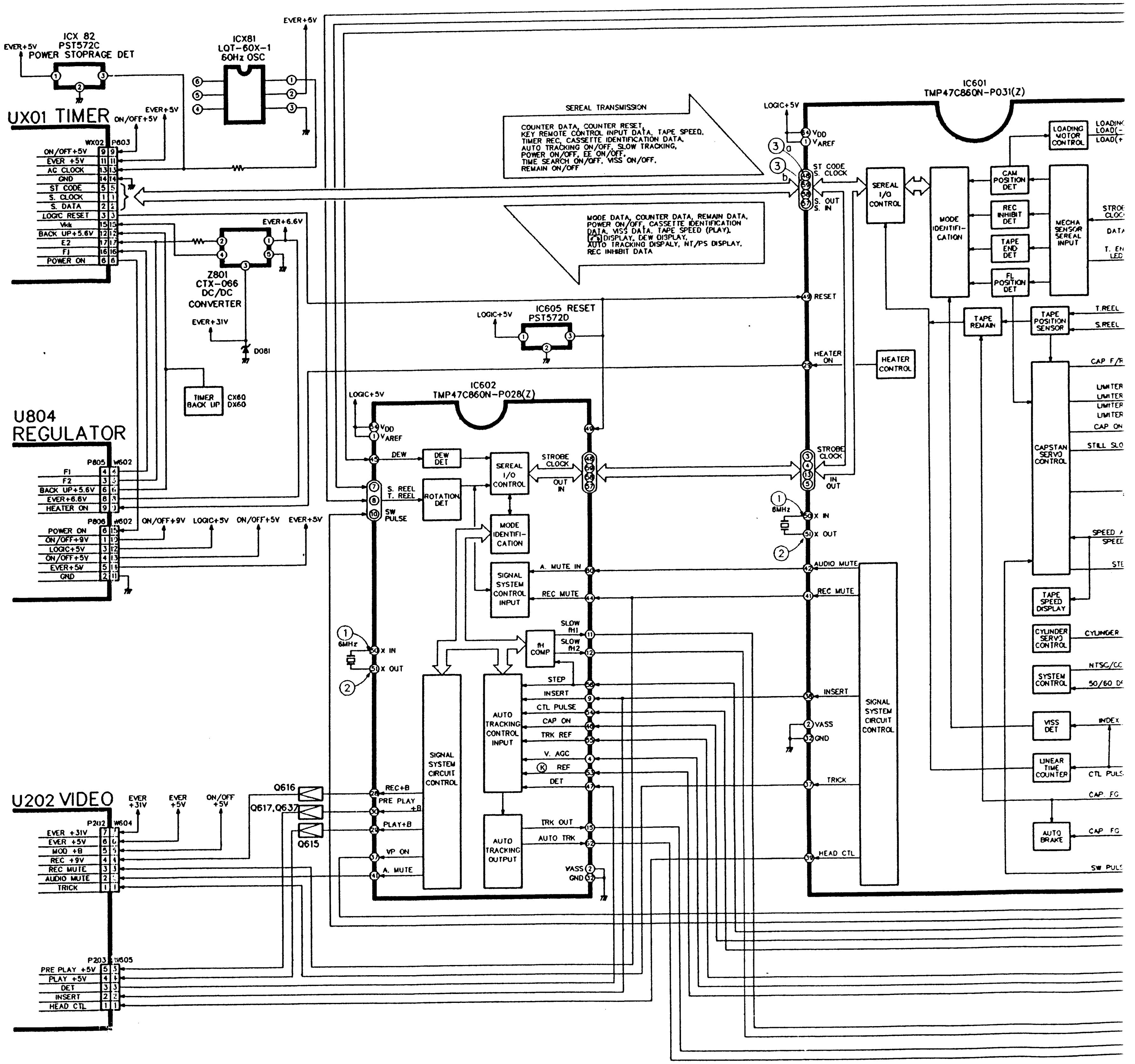


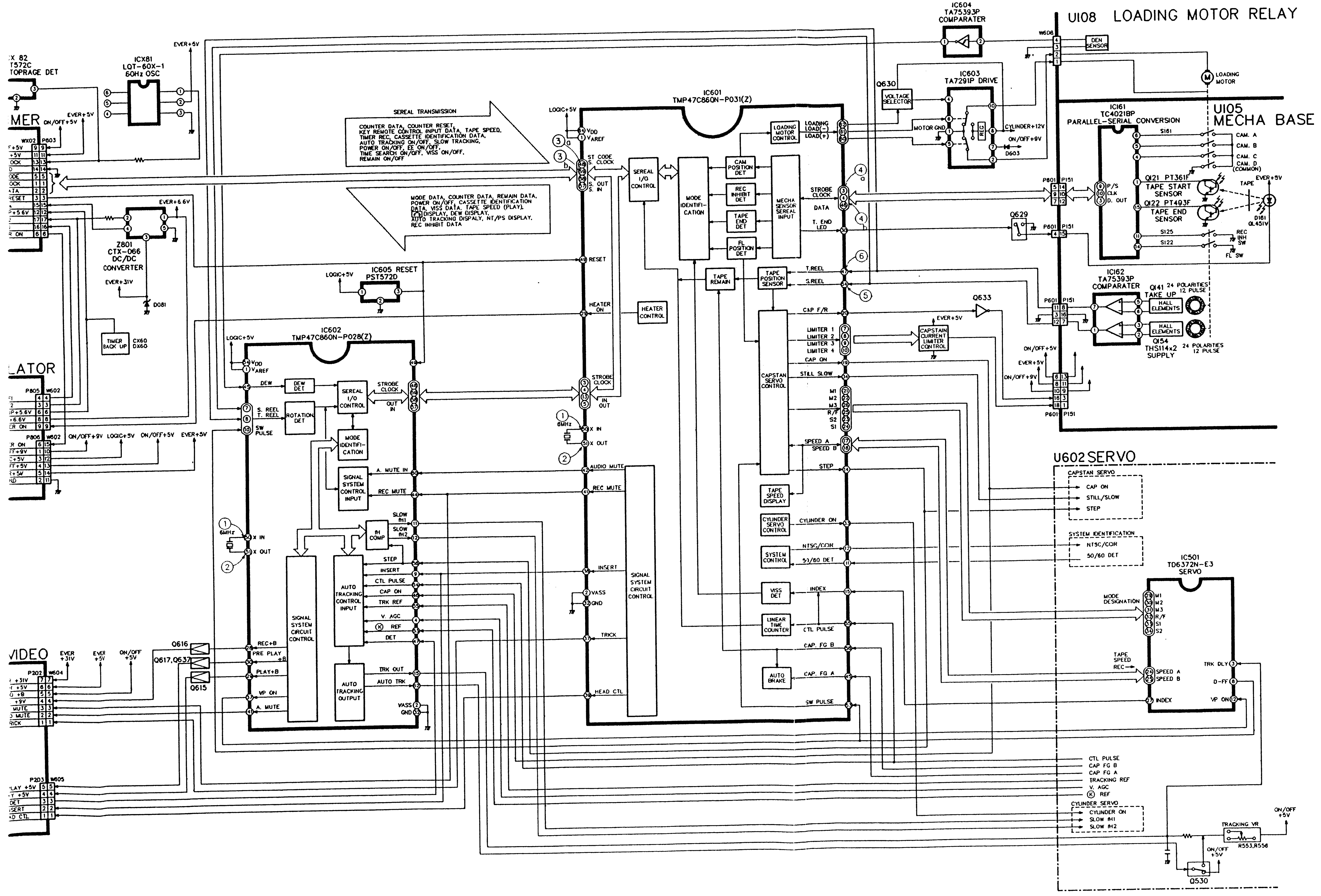
V: 2V/div.
H: 5ms/div.

⑥ IC601, Pin (47)



V: 2V/div.
H: 5ms/div.

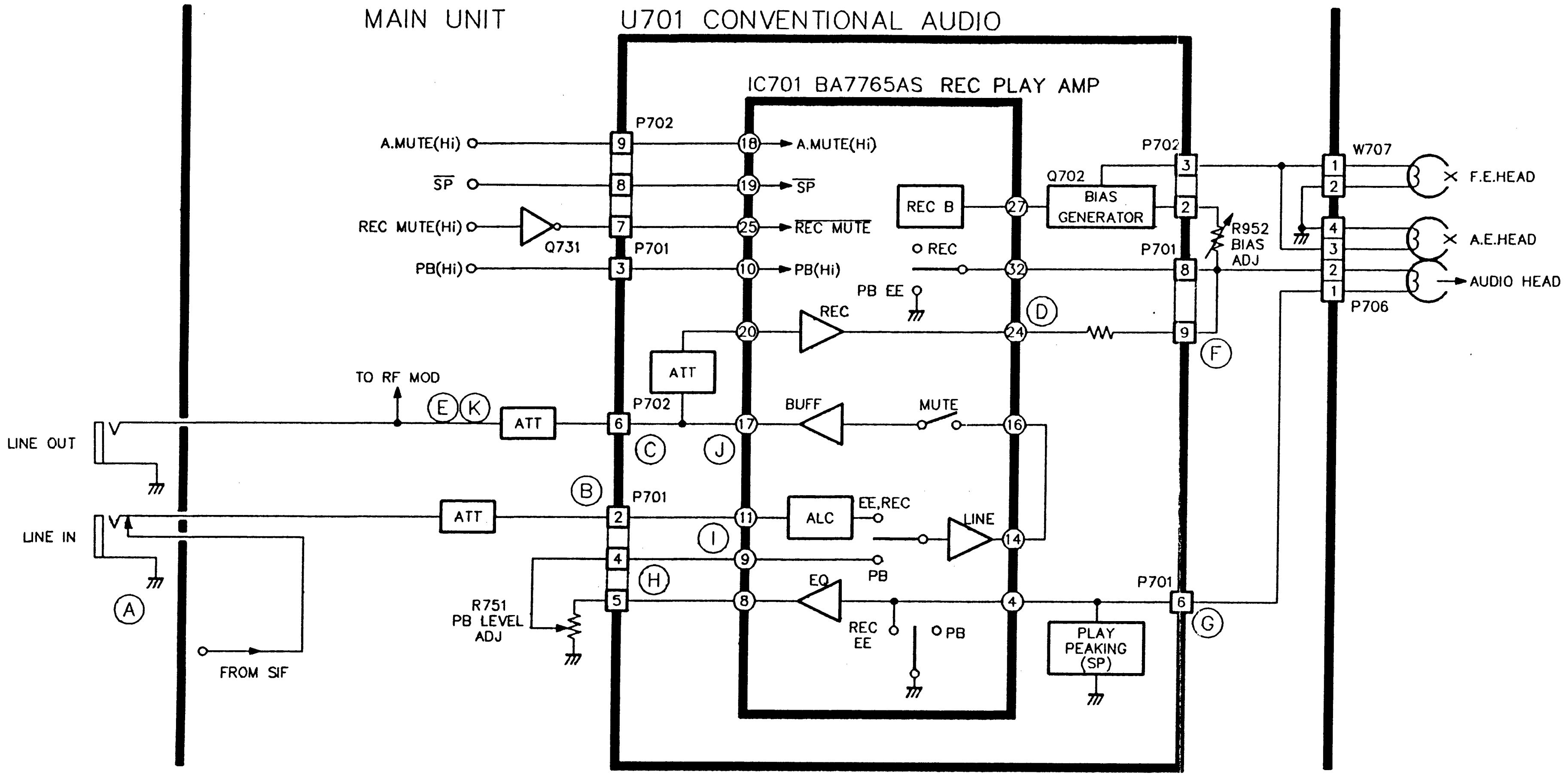

ICX 82
PST572C
POWER STOPRAGE DET
EVER+5V
ICX81
LQT-60X-1
60Hz OSC
UX01 TIMER
ON/OFF+5V
EVER+5V
WX02
P603
ON/OFF+5V
EVER +5V
AC CLOCK
GND
ST CODE
S. CLOCK
S. DATA
LOGIC RESET
Vkk
BACK UP+5.6V
E2
F1
POWER ON
EVER+6.6V
Z801
CTX-066
DC/DC
CONVERTER
EVER+31V
D081
TIMER BACK UP
CX60
DX60
U804
REGULATOR
P805
W602
F1
F2
BACK UP+5.6V
EVER+6.6V
HEATER ON
P806
POWER ON
ON/OFF+9V
LOGIC+5V
ON/OFF+5V
EVER+5V
GND
U202 VIDEO
EVER +31V
EVER +5V
ON/OFF +5V
P202
W604
EVER +31V
EVER +5V
MOD +B
REC +9V
REC MUTE
AUDIO MUTE
TRICK
P203
W605
PRE PLAY +5V
PLAY +5V
DET
INSERT
HEAD CTL
Q616
Q617, Q637
Q615
SEREAL TRANSMISSION
COUNTER DATA, COUNTER RESET, KEY REMOTE CONTROL INPUT DATA, TAPE SPEED, TIMER REC, CASSETTE IDENTIFICATION DATA, AUTO TRACKING ON/OFF, SLOW TRACKING, POWER ON/OFF, EE ON/OFF, TIME SEARCH ON/OFF, VISS ON/OFF, REMAIN ON/OFF
MODE DATA, COUNTER DATA, REMAIN DATA, POWER ON/OFF, CASSETTE IDENTIFICATION DATA, VISS DATA, TAPE SPEED (PLAY), DISPLAY, DEW DISPLAY, AUTO TRACKING DISPALY, NT/PS DISPLAY, REC INHIBIT DATA
IC605 RESET
PST572D
LOGIC+5V
IC602
TMP47C860N-P028(Z)
VDD
VAREF
DEW
DEW DET
S. REEL
T. REEL
ROTATION DET
SW PULSE
SEREAL I/O CONTROL
STROBE CLOCK
OUT IN
MODE IDENTIFI-CATION
SIGNAL SYSTEM CONTROL INPUT
A. MUTE IN
REC MUTE
SLOW fH1
SLOW fH2
fH COMP
6MHz
X IN
X OUT
STEP
INSERT
CTL PULSE
CAP ON
TRK REF
V. AGC
Ⓚ REF
DET
SIGNAL SYSTEM CIRCUIT CONTROL
AUTO TRACKING CONTROL INPUT
AUTO TRACKING OUTPUT
REC+B
PRE PLAY +B
PLAY+B
VP ON
A. MUTE
TRK OUT
AUTO TRK
VASS
GND
IC601
TMP47C860N-P031(Z)
VDD
VAREF
ST CODE
S. CLOCK
S. OUT
S. IN
RESET
HEATER ON
HEATER CONTROL
STROBE CLOCK
IN
OUT
X IN
X OUT
AUDIO MUTE
REC MUTE
INSERT
VASS
GND
TRICK
HEAD CTL
SIGNAL SYSTEM CIRCUIT CONTROL
SEREAL I/O CONTROL
MODE IDENTIFI-CATION
LOADING MOTOR CONTROL
CAM POSITION DET
REC INHIBIT DET
TAPE END DET
FL POSITION DET
MECHA SENSOR SEREAL INPUT
TAPE REMAIN
TAPE POSITION SENSOR
CAPSTAN SERVO CONTROL
TAPE SPEED DISPLAY
CYLINDER SERVO CONTROL
SYSTEM CONTROL
VISS DET
LINEAR TIME COUNTER
AUTO BRAKE
T.REEL
S.REEL
CAP F/R
LIMITER
LIMITER
LIMITER
LIMITER
CAP ON
STILL SLO
CYLINDER
NTSC/CC
50/60
INDEX
CTL PULS
CAP FG
CAP FG
SW PULS

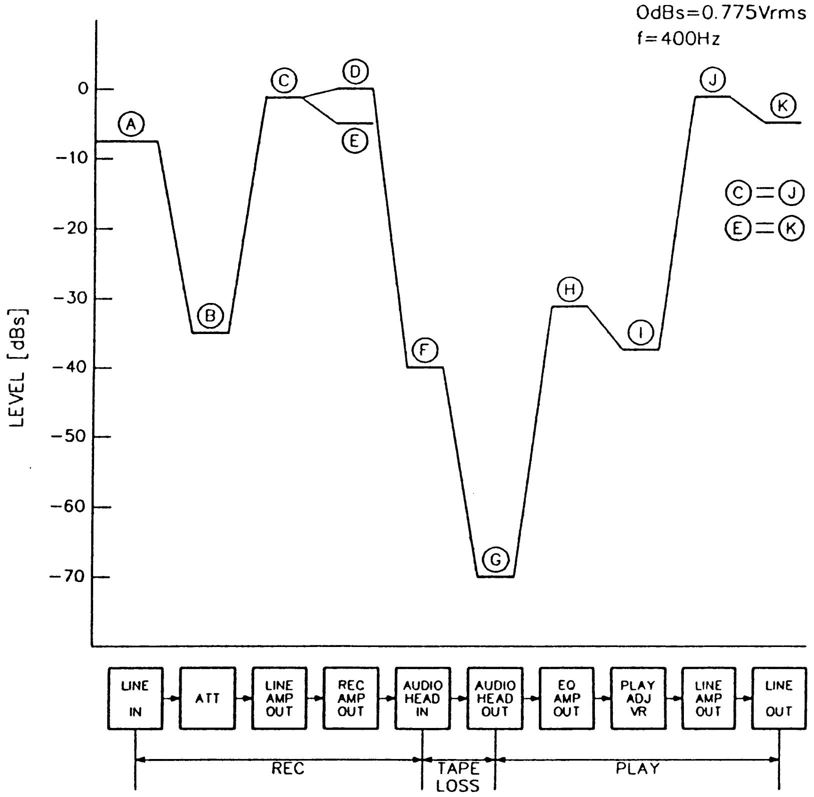


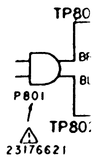
U108 LOADING MOTOR RELAY
IC604 TA75393P COMPARATER
DEW SENSOR
LOADING MOTOR
Q630 VOLTAGE SELECTOR
IC603 TA7291P DRIVE
CYLINDER+12V
ON/OFF+9V
D603
U105 MECHA BASE
IC161 TC4021BP PARALLEL-SERIAL CONVERSION
CAM. A
CAM. B
CAM. C
CAM. D (COMMON)
Q121 PT361F TAPE START SENSOR
Q122 PT493F TAPE END SENSOR
D161 QL451V
REC INH SW
FL SW
IC162 TA75393P COMPARATER
Q141 TAKE UP 24 POLARITIES 12 PULSE
HALL ELEMENTS
Q154 THS114x2 SUPPLY 24 POLARITIES 12 PULSE
Q633
Q629
CAPSTAIN CURRENT LIMITER CONTROL
IC601 TMP47C860N-P031(Z)
IC602 TMP47C860N-P028(Z)
IC605 RESET PST572D
ICX81 LQT-60X-1 60Hz OSC
Z801 CTX-066 DC/DC CONVERTER
D081
TIMER BACK UP CX60 DX60
SEREAL TRANSMISSION
COUNTER DATA, COUNTER RESET, KEY REMOTE CONTROL INPUT DATA, TAPE SPEED, TIMER REC, CASSETTE IDENTIFICATION DATA, AUTO TRACKING ON/OFF, SLOW TRACKING, POWER ON/OFF, EE ON/OFF, TIME SEARCH ON/OFF, VISS ON/OFF, REMAIN ON/OFF
MODE DATA, COUNTER DATA, REMAIN DATA, POWER ON/OFF, CASSETTE IDENTIFICATION DATA, VISS DATA, TAPE SPEED (PLAY), DISPLAY, DEW DISPLAY, AUTO TRACKING DISPALY, NT/PS DISPLAY, REC INHIBIT DATA
SEREAL I/O CONTROL
MODE IDENTIFICATION
CAM POSITION DET
REC INHIBIT DET
TAPE END DET
FL POSITION DET
MECHA SENSOR SEREAL INPUT
LOADING MOTOR CONTROL
TAPE REMAIN
TAPE POSITION SENSOR
HEATER CONTROL
CAPSTAN SERVO CONTROL
TAPE SPEED DISPLAY
CYLINDER SERVO CONTROL
SYSTEM CONTROL
VISS DET
LINEAR TIME COUNTER
AUTO BRAKE
SIGNAL SYSTEM CIRCUIT CONTROL
DEW DET
ROTATION DET
SEREAL I/O CONTROL
MODE IDENTIFICATION
SIGNAL SYSTEM CONTROL INPUT
fH COMP
AUTO TRACKING CONTROL INPUT
AUTO TRACKING OUTPUT
U602 SERVO
CAPSTAN SERVO
CAP ON
STILL/SLOW
STEP
SYSTEM IDENTIFICATION
NTSC/COIR
50/60 DET
IC501 TD6372N-E3 SERVO
MODE DESIGNATION
TAPE SPEED REC
TRK DLY
D-FF
VP ON
INDEX
CTL PULSE
CAP FG B
CAP FG A
TRACKING REF
V. AGC
Ⓚ REF
CYLINDER SERVO
CYLINDER ON
SLOW fH1
SLOW fH2
TRACKING VR
R553,R556
Q530
Q616
Q617,Q637
Q615
VIDEO
LATOR
MER
EVER+5V
EVER+6.6V
EVER+31V
LOGIC+5V
ON/OFF+5V
ON/OFF+9V
6MHz
8MHz

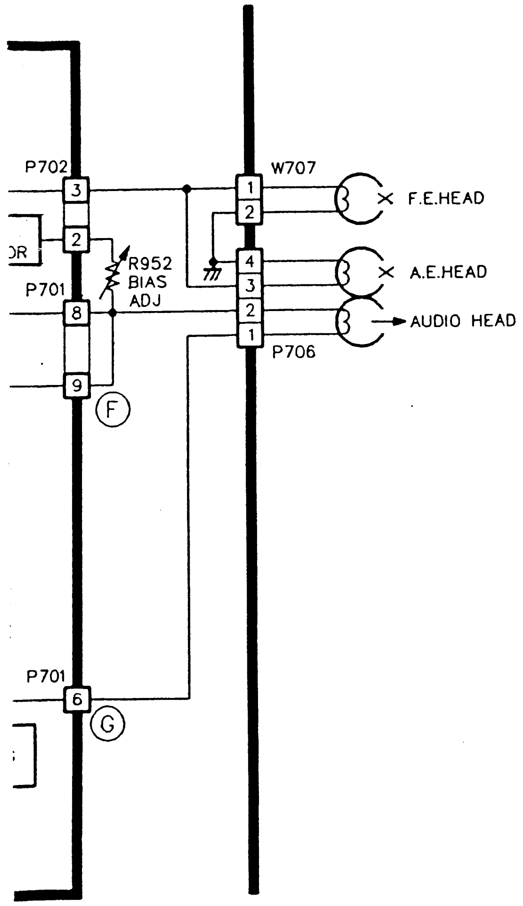
MC-Service

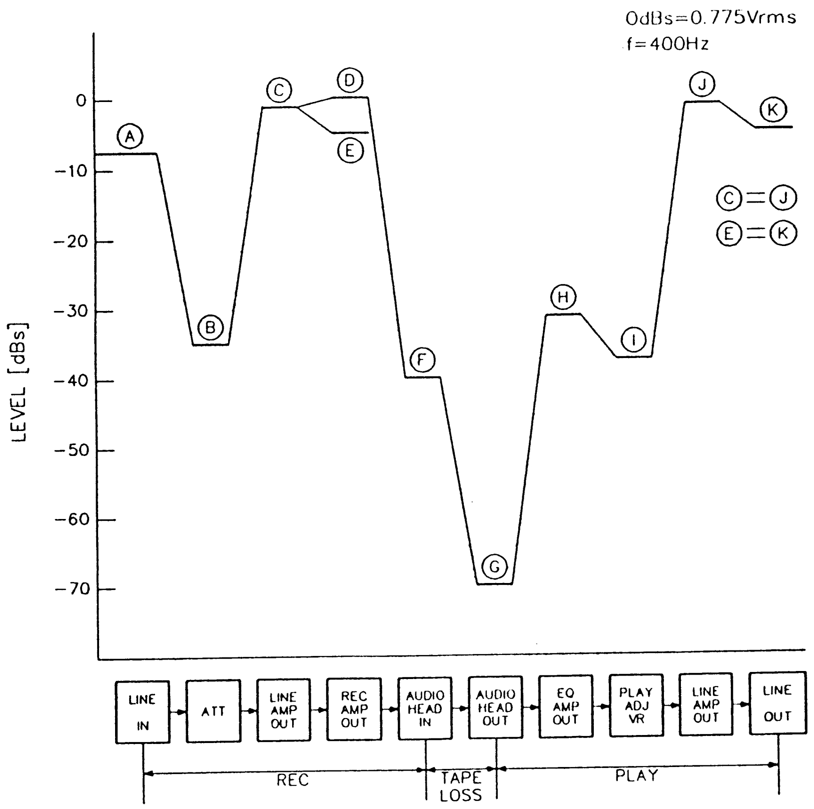
13-1. Audio Block Diagram


MAIN UNIT
U701 CONVENTIONAL AUDIO
IC701 BA7765AS REC PLAY AMP
A.MUTE(Hi)
SP
REC MUTE(Hi)
PB(Hi)
Q731
P702
P701
9
8
7
3
18
19
25
10
A.MUTE(Hi)
SP
REC MUTE
PB(Hi)
REC B
27
Q702
BIAS GENERATOR
O REC
32
PB EE
REC
20
24
D
ATT
TO RF MOD
E K
ATT
6
P702
C
J
17
BUFF
MUTE
16
LINE OUT
LINE IN
A
B
ATT
2
P701
I
11
ALC
EE,REC
LINE
14
4
9
PB
H
5
8
EQ
REC EE
O PB
4
R751
PB LEVEL ADJ
FROM SIF
P701
6
G
PLAY PEAKING (SP)
P702
3
2
R952
BIAS ADJ
P701
8
9
F
W707
1
2
4
3
2
1
P706
F.E.HEAD
A.E.HEAD
AUDIO HEAD




TP80
P801
TP80
23176621


P702
3
2
OR
R952
BIAS
ADJ
P701
8
9
F
P701
6
G
W707
1
2
4
3
2
1
P706
F.E.HEAD
A.E.HEAD
AUDIO HEAD


0dBs=0.775Vrms
f=400Hz
LEVEL [dBs]
0
-10
-20
-30
-40
-50
-60
-70
A
B
C
D
E
F
G
H
I
J
K
C=J
E=K
LINE IN
ATT
LINE AMP OUT
REC AMP OUT
AUDIO HEAD IN
AUDIO HEAD OUT
EQ AMP OUT
PLAY ADJ VR
LINE AMP OUT
LINE OUT
REC
TAPE LOSS
PLAY

A

B

C

D

E

F

G

SECTION 4
PARTS LIST

SAFETY PRECAUTION

The parts identified by ⚠ mark are critical for safety. Replace only with part number specified.
The mounting position of replacement is to be identical with originals. The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

NOTICE

The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.
Parts marked # are of chip type and mounted on original PC boards.
However, when they are placed for servicing works, use discrete parts listed on the parts list.

This parts list is basically for V-880MS. The different parts of V-880MC against V-880MS are shown in the DIFFERENCE LIST.

ABBREVIATIONS

1. **Integrated circuit (IC)**
2. **Capacitor (Cap)**
   - **Unit** — **Ex.**

		Ex.
F	farad	
MF	microfarad ($\mu F = 10^{-6}F$)	10MF = $10\mu F$
PF	picofarad ($pF = 10^{-6}\mu F = 10^{-12}F$)	10PF = 10pF

   - **Capacitance tolerance (for nominal capacitance higher than 10pF)**

Symbol	B	C	D	F	G	J	K	M	N
Tolerance %	±0.1	±0.25	±0.5	±1	±2	±5	±10	±20	±30

Symbol	P	Q	T	U	V	W	X	Y	Z
Tolerance %	+100 0	+30 -10	+50 -10	+75 -10	+20 -10	+100 -10	+40 -20	+150 -10	+80 -20

Ex. 10MF J = $10\mu F$ ±5%

   - **Capacitance tolerance (for nominal capacitance lower than 10pF)**

Symbol	B	C	D	F	G
Tolerance pF	±0.1	±0.25	±0.5	±1	±2

Ex. 10PF G = 10pF ± 2pF

3. **Resistor (Res)**
   - **Unit** — **Ex.**

		Ex.	
No Mark	Ω	10	10Ω
K	kΩ	10K	10kΩ
M	MΩ	10M	10MΩ
W	Watt	1W	1 Watt

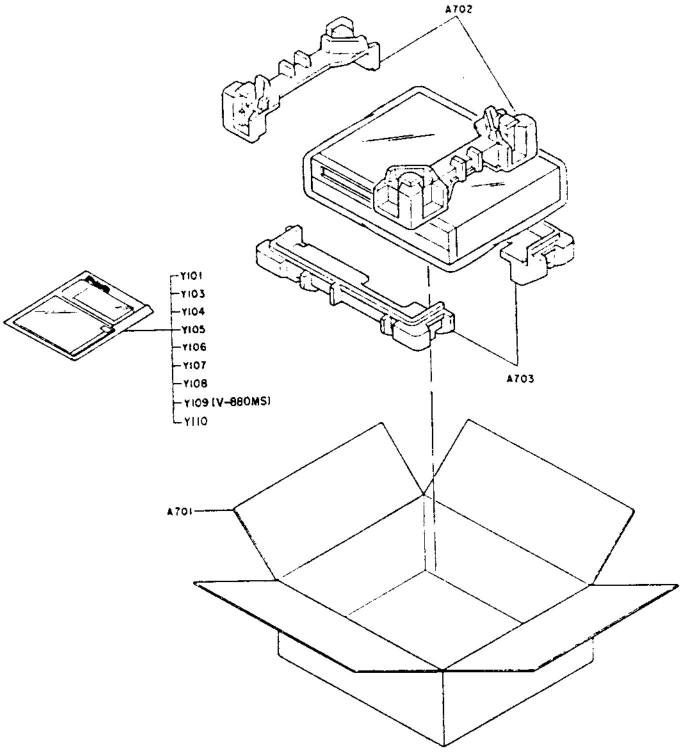
   - **Resistance tolerance**

Symbol	B	C	D	F	G	J	K	M
Tolerance %	±0.1	±0.25	±0.5	±1	±2	±5	±10	±20

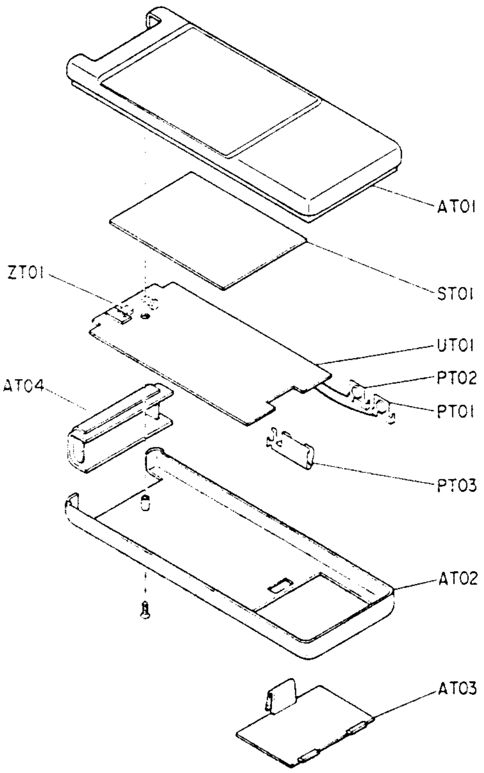
Ex. 470 J = 470Ω ± 5%

1. EXPLODED VIEWS

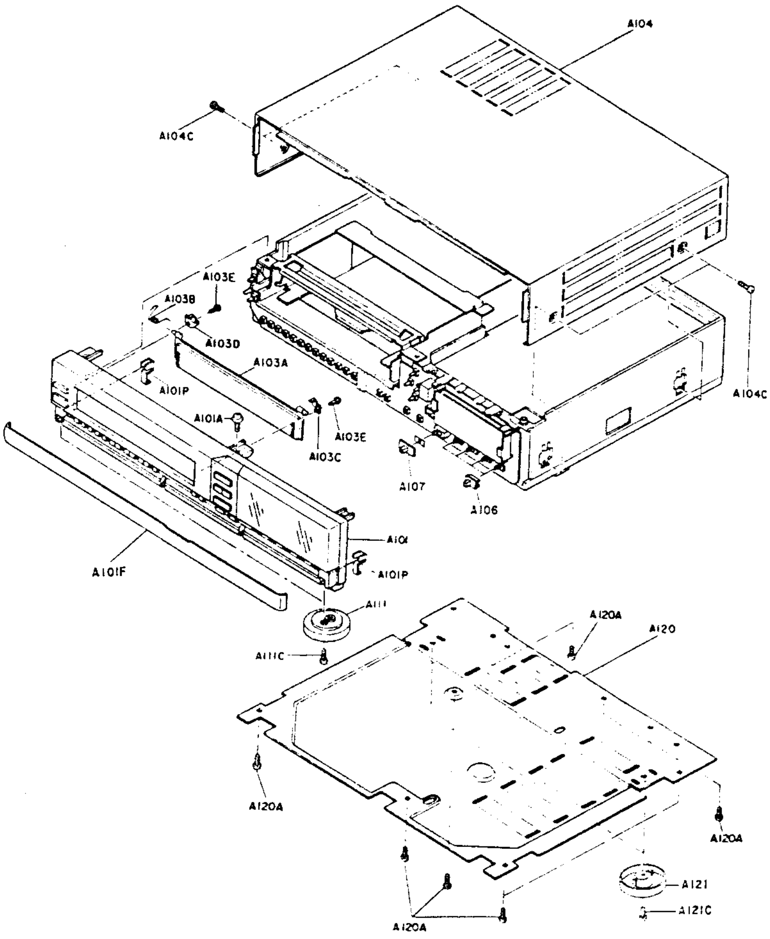
(1) Packing Assembly


A702
Y101
Y103
Y104
Y105
Y106
Y107
Y108
Y109 (V-880MS)
Y110
A703
A701

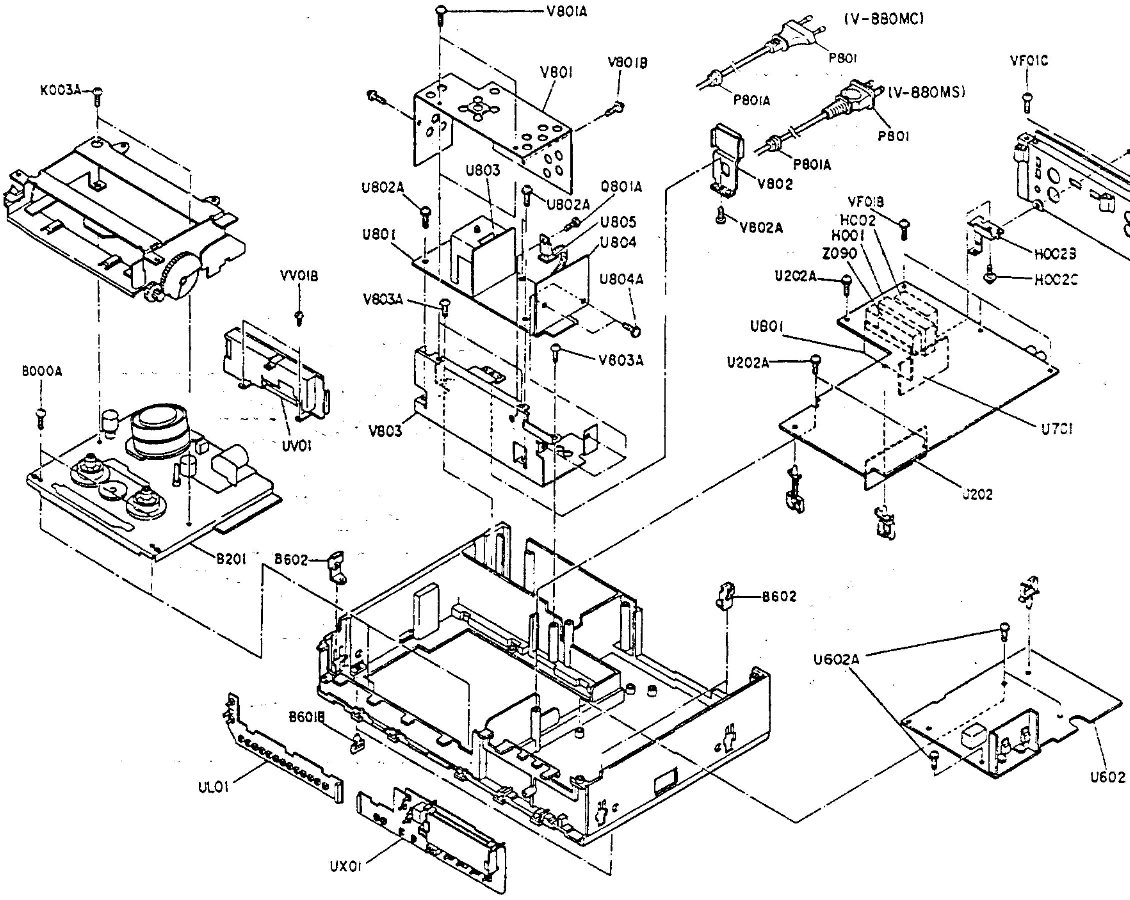
(2) Cabinet Assemlby


AT01
ST01
ZT01
UT01
PT02
AT04
PT01
PT03
AT02
AT03

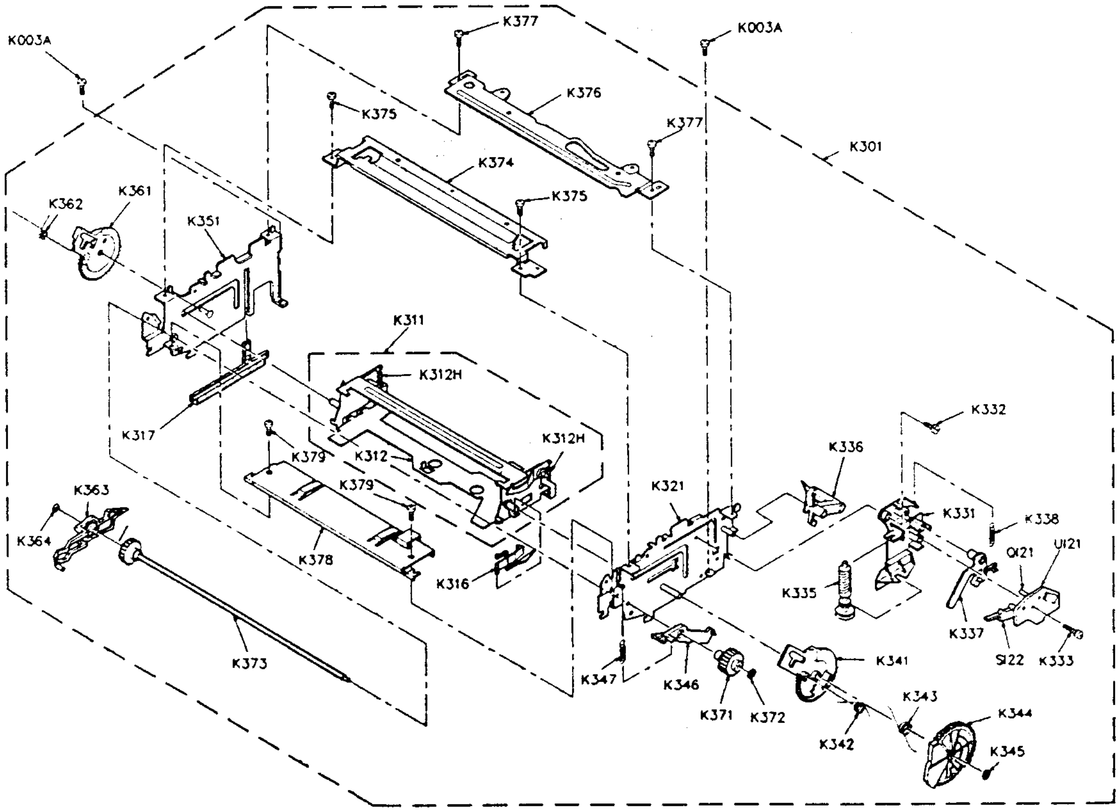
(3) Chassis Assembly


A104
A104C
A103E
A103B
A103D
A103A
A101P
A101A
A103E
A103C
A107
A106
A104C
A101
A101F
A101P
A111
A120A
A120
A111C
A120A
A120A
A121
A121C
A120A

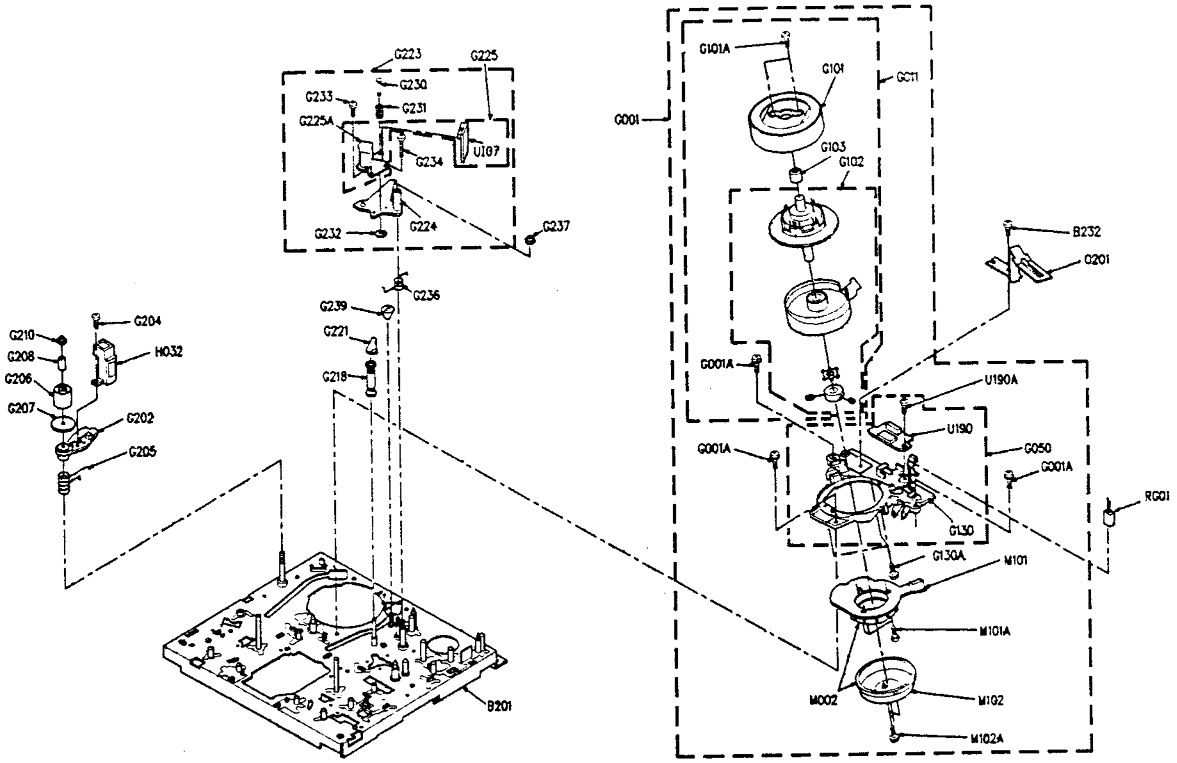
(4) Cassette Holder Assembly


V801A
(V-880MC)
P801
V801
V801B
P801A
(V-880MS)
P801
VF01C
K003A
P801A
P250A
V802
U803
U802A
Q801A
U802A
U805
U804
V802A
VF01B
HC02
H001
Z090
HC02B
HC02C
U801
U202A
VF01
VV01B
U804A
V803A
U801
U202A
V803A
B000A
UV01
V803
U701
J202
B201
B602
B602
U602A
B601B
U602
UL01
UX01

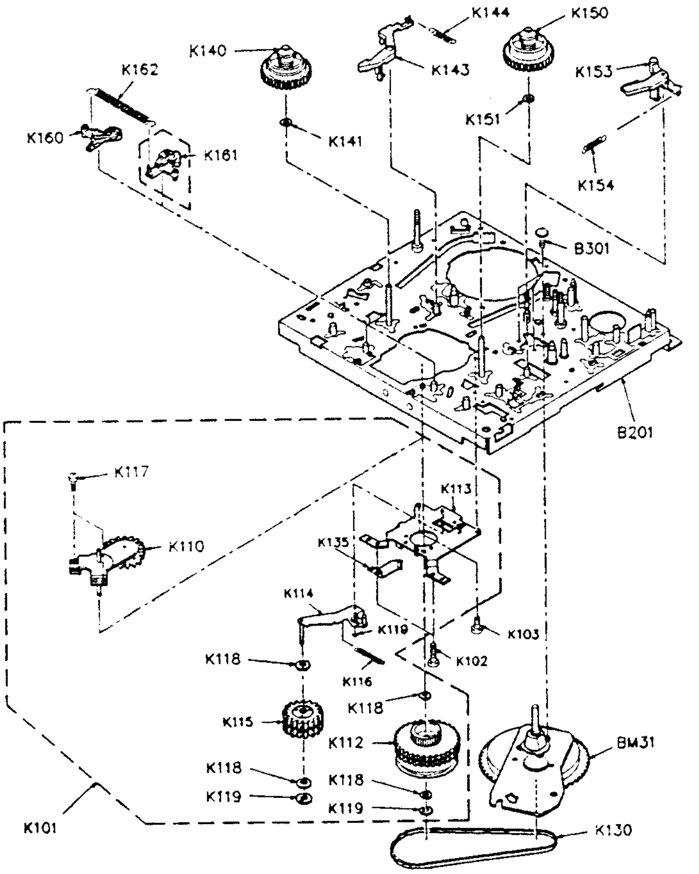
(5) Mechanical Parts (1)


K003A
K377
K003A
K376
K375
K377
K301
K374
K375
K362
K361
K351
K311
K312H
K317
K379
K312
K312H
K336
K332
K363
K379
K321
K331
K338
K364
K378
U121
Q121
K316
K335
K337
S122
K333
K341
K347
K346
K371
K372
K373
K343
K344
K342
K345

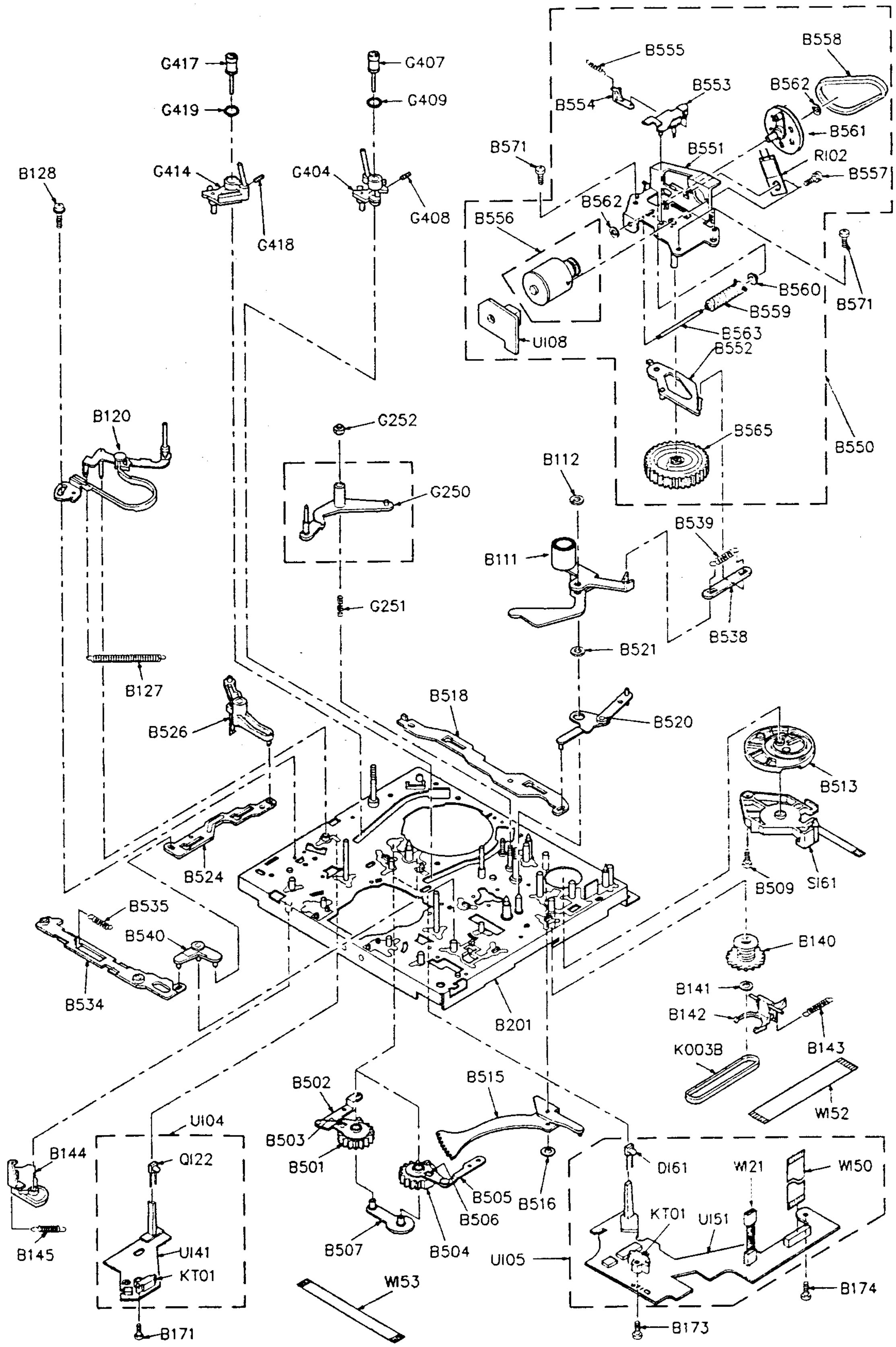
(6) Mechanical Parts (2)


G223
G225
G230
G233
G231
G225A
U107
G234
G224
G232
G237
G236
G239
G204
G210
G221
H032
G208
G206
G218
G207
G202
G205
B201
G101A
G101
G011
G001
G103
G102
B232
G201
G001A
U190A
U190
G001A
G050
G001A
RG01
G130
G130A
M101
M101A
M002
M102
M102A

(7) Mechanical Parts (3)


K144
K150
K140
K143
K162
K153
K151
K160
K141
K161
K154
B301
B201
K117
K113
K110
K135
K114
K119
K103
K118
K102
K116
K118
K115
K112
BM31
K118
K118
K119
K119
K101
K130

(8) Mechanical Parts (3)


G417
G407
G419
G409
B555
B558
B553
B562
B554
B561
B571
B551
R102
B557
B128
G414
G404
G418
G408
B562
B556
B560
B571
B559
B563
U108
B552
B120
G252
B565
B550
B112
G250
B539
B111
G251
B538
B521
B127
B518
B526
B520
B513
B524
B509
S161
B535
B540
B140
B534
B201
B141
B142
B143
K003B
B502
B515
W152
U104
B144
Q122
B503
D161
W121
W150
B501
B505
B516
KT01
U151
B506
B145
U141
B507
B504
U105
KT01
B174
W153
B171
B173

2. PARTS LIST

LOCATION NUMBER	PART NUMBER	DESCRIPTION
		- MECHANICAL PARTS -
A101	70884106	Front Panel
A101A	70391558	Screw
A101F	70868364	Door
A101P	70866631	Door Spring
A103A	70868365	Cassette Door
A103B	70351857	Spring
A103C	70866646	Lock Plate
A103D	70866647	Lock Plate
A103E	70391443	Screw, 2x6mm
A104	70824307	Top Cover
A104C	70391414	Screw, 3x8mm
A106	70826460	Knob
A107	70826461	Knob
A111	70843565	Insulator Assy
A120	70815204	Bottom Cover
A121	70843499	Insulator
A121C	70391440	Screw, 3x10mm
A701	70917548	Case
A702	70921420	Packing(U)
A703	70921421	Packing(L)
A708	70915052	Sheet
AT01	70108686	Case
AT02	70108520	Case(Lower)
AT03	70108521	Case(Battery)
AT04	70108522	Filter
B000A	70391081	Screw, 4x12mm
B111	70323327	Pinch Assy
B112	70396196	Washer, FI 3. 6x8x 0. 5mm
B120	70328360	Tension Regulator Assy
B127	70351944	Spring
B128	23721310	Screw, 3x10mm
B140	70328366	FL Drive Gear Assy
B141	70396284	Washer, 4. 0x1. 6x0. 35mm
B142	70363382	Lever
B143	70351845	Spring
B144	70363383	Lever
B145	70351846	Spring
B171	23712308	Screw, 3x0. 5x8mm
B173	23712308	Screw, 3x0. 5x8mm
B174	70391334	Screw, 3x8mm
B232	70391608	Screw 2. 6x5mm
B250A	70391345	Screw, 3x3mm
B501	70333298	Supply Loading Gear
B502	70322431	Link Assy
B503	70351875	Spring
B504	70333329	Take Up Loading Gear
B505	70322432	Link Assy
B506	70351876	Spring
B507	70361335	Cap
B509	70391334	Screw, 3x8mm
B513	70331164	Cam
B515	70322430	Lever Assy
B516	70396196	Washer, FI 3. 6x8x 0. 5mm
B518	70376400	Slider
B520	70323329	Lever Assy
B521	70347034	Polislider 4. 1x 6. 5x 0. 50mm
B524	70376407	Connector
B526	70323340	Cam Lever Assy
B534	70366017	Slider
B535	70351847	Spring
B538	70376408	Connector
B539	70351873	Spring
B540	70363385	Lever
B550	70312231	Loading Drive Assy
B555	70351874	Spring
B556	70312232	Loading Motor Assy
B557	23723304	Screw, 3x4mm
B558	70342131	Belt
B562	70396191	Washer, FI 2. 1x5x 0. 5mm
B571	70391334	Screw, 3x8mm
B601B	70862380	Rubber
BM31	70125291	Motor Assy

LOCATION NUMBER	PART NUMBER	DESCRIPTION
G001	70311522	Cylinder Assy
G001A	23723308	Screw, 3x8mm
G101	70325499	Upper Cylinder Assy
G101A	70391398	Screw, 2. 6x8mm
G102	70325500	Lower Cylinder Assy
G103	70325494	Ground Cap Assy
G103S	70903456	Ground Brush KIT
G130A	70391409	Screw 2. 6x8mm
G155	23731306	Screw, 3x5x6mm
G175B	23030107	Screw, 3x5mm
G202	70363423	Lever
G205	70351877	Spring
G206	70348229	Inpedance Roller
G207	70368208	Flange
G208	70338172	Sleeve
G210	70393025	NUT, 3x3mm
G218	70379067	Guide Sleeve
G221	70368198	NO. 8 Guide Cap
G224	70328389	ACE Main Base Assy
G225	70182063	ACE Head Sub Assy
G225A	70182097	ACE Sub Base
G230	70378601	Shaft
G231	70351665	Spring
G232	23002250	E-ring
G233	23712308	Screw, 3x0. 5x8mm
G234	70391322	Adjust Screw
G236	70351878	Spring
G237	70393026	Nut, 3x4. 5mm
G239	70392018	Taper Nut
G250	70320239	NO. 9 Guide Lever Assy
G251	70351842	Spring
G252	70393025	NUT, 3x3mm
G404	70322434	Slider Assy
G407	70322438	Roller Assy
G408	70391570	Screw, 2x3mm
G409	70353115	0-ring
G414	70322437	Slider Assy
G417	70322435	Roller Assy
G418	70391570	Screw, 2x3mm
G419	70353115	0-ring
H001	70121106	Tuner EC432A
H002	70123201	RF Modulator MMM283X1
H002C	23721305	Screw, 3x5mm
H032A	70183018	FE Head
K003A	23712308	Screw, 3x0. 5x8mm
K003B	70342133	Belt
K102	70391334	Screw, 3x8mm
K103	70391345	Screw, 3x3mm
K110	70326670	Idle Gear Assy
K110K	70351887	Spring
K112	70326644	Clutch Assy
K114	70326646	Gear Lever Assy
K115A	70333302	Gear
K115B	70333301	Gear
K116	70351890	Spring
K117	70391447	Screw, 2. 6x3mm
K118	70396057	Washer, 5. 4x3. 1x0. 5mm
K119	70396193	Washer, FI 2. 6x6x 0. 5mm
K119A	70396278	Washer 2. 6x8x0. 5
K130	70342132	Belt
K135	70373354	Bracket
K140	70327115	S Reel Table Assy
K141	70394200	Spacer
K143	70363424	Lever
K144	70351892	Spring
K150	70327160	Take Up Reel Table Assy
K151	70394200	Spacer
K153	70326648	Reverse Brake Assy
K154	70351893	Spring
K160	70326649	Supply Brake Assy
K161	70326650	Take Up Brake Assy
K162	70351894	Spring
K301	70314306	Front Loading Assy
K312H	70351882	Spring
K317	70366047	Slider

LOCATION NUMBER	PART NUMBER	DESCRIPTION
K331	70324409	Bracket
K332	23712308	Screw, 3x0.5x8mm
K335	70324001	Front Loading Worm Assy
K335C	70338175	Spacer
K336	70363426	Opener
K337	70363439	Lever
K338	70351879	Spring
K341	70333331	Gear
K342	70351883	Spring
K343	70351884	Spring
K344	70333332	Gear
K345	70396195	Washer,FI 3.6x6x 0.5mm
K346	70363425	Lever
K347	70351885	Spring
K361	70333334	Gear
K362	70351886	Spring
K363	70363416	Lever
K364	70396247	Washer,2.6x8.0x0.5mm
K371	70333333	Gear
K372	70396248	Washer,2.6x5.0x0.5mm
K373	70324425	Shaft Assy
K375	23712308	Screw, 3x0.5x8mm
K377	23712308	Screw, 3x0.5x8mm
K379	23774305	Screw, 3X0.5X5mm
M002	70903457	Cylinder Motor
P101	23902596	Socket,9P
P250A	70391440	Screw,3x10mm
⚠P801	23176701	Power Cord
⚠P801A	70846155	Cord Holder
Q810A	23721308	Screw,3x8mm
RG01	70213108	Dew Heater
RI02	70325243	Dew Sensor Assy
SI61	70145381	Cam Switch Assy
ST01	70108687	Rubber
U190A	70391434	Screw, 2.6x6mm
U202A	72471082	Screw,3x10mm
U602A	72471082	Screw,3x10mm
U802A	72471081	Screw,3x8mm
U804A	72471081	Screw,3x8mm
V801A	72471081	Screw,3x8mm
V801B	72471081	Screw,3x8mm
V802A	70391355	Screw,3x8mm
V803A	70391081	Screw,4x12mm
VF01B	72471082	Screw,3x10mm
VF01C	72471082	Screw,3x10mm
VF01D	23721305	Screw,3x5mm
VV01B	70391434	Screw, 2.6x6mm
VV01C	23969946	Tape
W601	70179893	Wire
WI52	70179391	Wire,FFC
WX03A	23969946	Tape
Y101	70971313	Owners Manual
Y103	70060070	Caution Sheet
Y104	70933070	Cover
Y105	23364494	ANT Cable,PAL
Y106	70148427	Remote Control Unit
Y109	23122780	AC Adaptor
Y110	23365255	ANT Adaptor
ZT01	23153736	Resonator,CSB455EB20

LOCATION NUMBER	PART NUMBER	DESCRIPTION
		DIFFERENCE LIST
V880MC		
A101	70884134	Front Panel
A701	70917558	Case
⚠P801	23176621	Power Cord,250V,2.5A
WI53	70178108	Wire FFC,6P
Y101	70971320	Owners Manual
Y109	--------	Not Used

LOCATION NUMBER	PART NUMBER	DESCRIPTION	
		- ELECTRICAL PARTS -	
■U202	70188776	P C Board Assy	Main
		- INTEGRATED CIRCUITS -	
IC201	B0384210	IC	TA8802N
IC202	B0589735	IC	TL8809P
IC203	B0589111	IC	TL8811P
IC204	23319003	IC	LVA523S
IC301	70119487	IC	BA7025L
IC302	70119487	IC	BA7025L
IC401	70128501	IC	M52063SP
IC402	70128382	IC	NJM2234S
IC403	70128382	IC	NJM2234S
Z090	70137237	F.U.	STD-MS1
Z481	70137214	F.U. SECAM	HSC-103
		- TRANSISTORS -	
Q071	A6002020	Transistor	RN1202
Q072	A6041857	Transistor	2SK117-Y
Q073	A6534430	Transistor	2SA1048-Y
Q074	A6332430	Transistor	2SC2458-Y
Q076	A6012010	Transistor	RN2201
Q077	A6002050	Transistor	RN1205
Q078	A6012060	Transistor	RN2206
Q079	A6002050	Transistor	RN1205
Q080	A6012060	Transistor	RN2206
Q081	A6012050	Transistor	RN2205
Q082	A6332430	Transistor	2SC2458-Y
Q083	A6012050	Transistor	RN2205
Q085	A6332430	Transistor	2SC2458-Y
Q091	A6332430	Transistor	2SC2458-Y
Q101	A6002040	Transistor	RN1204
Q102	A6002040	Transistor	RN1204
Q103	A6002040	Transistor	RN1204
Q104	A6002040	Transistor	RN1204
Q106	A6332430	Transistor	2SC2458-Y
Q107	A6534430	Transistor	2SA1048-Y
Q108	A6332430	Transistor	2SC2458-Y
Q109	A6534430	Transistor	2SA1048-Y
Q110	A6332430	Transistor	2SC2458-Y
Q111	A6332430	Transistor	2SC2458-Y
Q112	A6012020	Transistor	RN2202
Q113	A6332430	Transistor	2SC2458-Y
Q114	A6002040	Transistor	RN1204
Q115	A6002040	Transistor	RN1204
Q116	A6332430	Transistor	2SC2458-Y
Q181	A6534430	Transistor	2SA1048-Y
Q182	A6332430	Transistor	2SC2458-Y
Q183	A6332430	Transistor	2SC2458-Y
Q184	A6002040	Transistor	RN1204
Q185	A6534430	Transistor	2SA1048-Y
Q186	A6002040	Transistor	RN1204
Q187	A6534430	Transistor	2SA1048-Y
Q212	A6002040	Transistor	RN1204
Q213	A6534430	Transistor	2SA1048-Y
Q214	A6002010	Transistor	RN1201
Q215	A6002010	Transistor	RN1201
Q216	A6002040	Transistor	RN1204
Q217	A6332430	Transistor	2SC2458-Y
Q218	A6332430	Transistor	2SC2458-Y
Q219	A6002040	Transistor	RN1204
Q220	A6002040	Transistor	RN1204
Q221	A6002010	Transistor	RN1201
Q222	A6002040	Transistor	RN1204
Q223	A6002040	Transistor	RN1204
Q224	A6002040	Transistor	RN1204
Q225	A6534430	Transistor	2SA1048-Y
Q226	A6534430	Transistor	2SA1048-Y
Q227	A6332430	Transistor	2SC2458-Y
Q228	A6332430	Transistor	2SC2458-Y
Q229	A6332430	Transistor	2SC2458-Y
Q230	A6534430	Transistor	2SA1048-Y
Q231	A6332430	Transistor	2SC2458-Y
Q232	A6534430	Transistor	2SA1048-Y
Q233	A6332430	Transistor	2SC2458-Y
Q234	A6332430	Transistor	2SC2458-Y
Q235	A6002040	Transistor	RN1204
Q236	A6332430	Transistor	2SC2458-Y
Q237	A6002040	Transistor	RN1204
Q238	A6002040	Transistor	RN1204
Q239	A6534040	Transistor	2SA1015-Y
Q240	A6332430	Transistor	2SC2458-Y
Q241	A6534430	Transistor	2SA1048-Y
Q242	A6002040	Transistor	RN1204
Q243	A6332430	Transistor	2SC2458-Y
Q244	A6002040	Transistor	RN1204
Q245	A6002020	Transistor	RN1202
Q246	A6332430	Transistor	2SC2458-Y
Q247	A6002040	Transistor	RN1204
Q248	A6002040	Transistor	RN1204
Q249	A6002040	Transistor	RN1204
Q261	A6332430	Transistor	2SC2458-Y
Q303	A6002040	Transistor	RN1204
Q304	A6002040	Transistor	RN1204
Q305	A6002040	Transistor	RN1204
Q411	A6332430	Transistor	2SC2458-Y
Q412	A6534430	Transistor	2SA1048-Y
Q413	A6332430	Transistor	2SC2458-Y
Q414	A6332430	Transistor	2SC2458-Y
Q415	A6332430	Transistor	2SC2458-Y
Q416	A6332430	Transistor	2SC2458-Y
Q417	A6534430	Transistor	2SA1048-Y
Q418	A6012020	Transistor	RN2202
Q419	A6012020	Transistor	RN2202
Q420	A6332430	Transistor	2SC2458-Y
Q421	A6332430	Transistor	2SC2458-Y
Q422	A6332430	Transistor	2SC2458-Y
Q423	A6332430	Transistor	2SC2458-Y
Q424	A6332430	Transistor	2SC2458-Y
Q425	A6002020	Transistor	RN1202
Q426	A6332430	Transistor	2SC2458-Y
Q481	A6325549	Transistor	2SC2236-Y
Q482	A6332430	Transistor	2SC2458-Y
Q731	A6002030	Transistor	RN1203
Q732	A6002020	Transistor	RN1202
		- DIODES -	
D001	A7151500	Diode	1SS201
D002	A7160570	Diode	1SS176
D003	23115922	Diode, Zener	UPC574J
D202	A7160570	Diode	1SS176
D203	A7160570	Diode	1SS176
D204	A7160570	Diode	1SS176
D205	A7160570	Diode	1SS176
D206	A7160570	Diode	1SS176
D207	A7160570	Diode	1SS176
D209	A7160570	Diode	1SS176
D210	A7160570	Diode	1SS176
D212	A7160570	Diode	1SS176
D213	A7160570	Diode	1SS176
D215	A7160570	Diode	1SS176
D216	A7160570	Diode	1SS176
D218	A7160570	Diode	1SS176
D301	A7151500	Diode	1SS201
D302	A7160570	Diode	1SS176
D303	A7160570	Diode	1SS176
D306	A7160570	Diode	1SS176
D307	A7160570	Diode	1SS176
D401	A7160570	Diode	1SS176
D402	A7160570	Diode	1SS176
D403	A7160570	Diode	1SS176
D404	A7160570	Diode	1SS176
D405	A7160570	Diode	1SS176
D731	A7160570	Diode	1SS176
D732	A7160570	Diode	1SS176
		- COILS -	
L001	23238710	Coil, Peaking	TRF4220AJ
L002	23238720	Coil, Peaking	TRF4339AJ
L003	23238710	Coil, Peaking	TRF4220AJ
L101	23289181	Coil, Peaking	TRF4181AF

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
L102	23238706	Coil, Peaking	TRF4470AJ	
L104	23237935	Coil, Peaking	TRF4200AC	
L105	23238706	Coil, Peaking	TRF4470AJ	
L106	23238710	Coil, Peaking	TRF4220AJ	
L107	23238710	Coil, Peaking	TRF4220AJ	
L108	23289471	Coil, Peaking	TRF4471AF	
L109	23289221	Coil, Peaking	TRF4221AF	
L110	23237970	Coil, Peaking	TRF4271AC	
L181	23238709	Coil, Peaking	TRF4270AJ	
L201	23238710	Coil, Peaking	TRF4220AJ	
L202	23289101	Coil, Peaking	TRF4101AF	
L203	23289470	Coil, Peaking	TRF4470AF	
L204	23238910	Coil, Peaking	TRF4101AC	
L205	23238910	Coil, Peaking	TRF4101AC	
L206	23238708	Coil, Peaking	TRF4330AJ	
L207	23238710	Coil, Peaking	TRF4220AJ	
L209	23237951	Coil, Peaking	TRF4439AC	
L210	23238704	Coil, Peaking	TRF4680AJ	
L211	23289331	Coil, Peaking	TRF4331AF	
L213	23238710	Coil, Peaking	TRF4220AJ	
L351	70272005	Coil, Resonant	LAA02	
L352	70272005	Coil, Resonant	LAA02	
L401	23289150	Coil, Peaking	TRF4150AF	
L403	23238708	Coil, Peaking	TRF4330AJ	
L404	23238910	Coil, Peaking	TRF4101AC	
		- CAPACITORS -		
C071	24474103	Cap, Ceramic	0.01MF	N 16V
C072	24203101	Cap, Electrolytic	100MF	M 16V
C073	24474103	Cap, Ceramic	0.01MF	N 16V
C074	24203101	Cap, Electrolytic	100MF	M 16V
C075	24474103	Cap, Ceramic	0.01MF	N 16V
C076	24206478	Cap, Electrolytic	0.47MF	M 50V
C077	24591104	Cap, Plastic	0.1MF	J 50V
C078	24203220	Cap, Electrolytic	22MF	M 16V
C079	24203100	Cap, Electrolytic	10MF	M 16V
C080	24474391	Cap, Ceramic	390PF	K 50V
C081	24474151	Cap, Ceramic	150PF	K 50V
C082	24591124	Cap, Plastic	0.12MF	J 50V
C083	24591104	Cap, Plastic	0.1MF	J 50V
C084	24591683	Cap, Plastic	0.068MF	J 50V
C085	24797101	Cap, Electrolytic	100MF	M 50V
C086	24206229	Cap, Electrolytic	2.2MF	M 50V
C087	24206229	Cap, Electrolytic	2.2MF	M 50V
C088	24474103	Cap, Ceramic	0.01MF	N 16V
C101	24201470	Cap, Electrolytic	47MF	M 6.3V
C102	24474103	Cap, Ceramic	0.01MF	N 16V
C103	24436121	Cap, Ceramic	120PF	J 50V
C104	24474103	Cap, Ceramic	0.01MF	N 16V
C105	24473330	Cap, Ceramic	33PF	J 50V
C106	24473270	Cap, Ceramic	27PF	J 50V
C107	24473470	Cap, Ceramic	47PF	J 50V
C108	24473150	Cap, Ceramic	15PF	J 50V
C109	24473270	Cap, Ceramic	27PF	J 50V
C110	24473120	Cap, Ceramic	12PF	J 50V
C111	24473270	Cap, Ceramic	27PF	J 50V
C113	24473470	Cap, Ceramic	47PF	J 50V
C114	24474103	Cap, Ceramic	0.01MF	N 16V
C115	24474103	Cap, Ceramic	0.01MF	N 16V
C116	24474103	Cap, Ceramic	0.01MF	N 16V
C117	24201470	Cap, Electrolytic	47MF	M 6.3V
C118	24538334	Cap, Plastic	0.33MF	J 50V
C119	24436471	Cap, Ceramic	470PF	J 50V
C120	24436820	Cap, Ceramic	82PF	J 50V
C121	24436221	Cap, Ceramic	220PF	J 50V
C122	24474103	Cap, Ceramic	0.01MF	N 16V
C124	24436201	Cap, Ceramic	200PF	J 50V
C125	24538104	Cap, Plastic	0.1MF	J 50V
C126	24473569	Cap, Ceramic	5.6PF	K 50V
C181	24436820	Cap, Ceramic	82PF	J 50V
C182	24474103	Cap, Ceramic	0.01MF	N 16V
C183	24794470	Cap, Electrolytic	47MF	M 16V
C184	24474103	Cap, Ceramic	0.01MF	N 16V
C185	24474103	Cap, Ceramic	0.01MF	N 16V
C186	24794470	Cap, Electrolytic	47MF	M 16V
C201	24203100	Cap, Electrolytic	10MF	M 16V
C202	24203100	Cap, Electrolytic	10MF	M 16V
C203	24085970	Cap, Electrolytic	10MF	M 16V
C204	24436201	Cap, Ceramic	200PF	J 50V
C205	24232223	Cap, Ceramic	0.022MF	Z 50V
C206	24206010	Cap, Electrolytic	1MF	M 50V
C207	24206010	Cap, Electrolytic	1MF	M 50V
C208	24201470	Cap, Electrolytic	47MF	M 6.3V
C209	24538473	Cap, Plastic	0.047MF	J 50V
C210	24436910	Cap, Ceramic	91PF	J 50V
C211	24474103	Cap, Ceramic	0.01MF	N 16V
C212	24205479	Cap, Electrolytic	4.7MF	M 35V
C213	24538183	Cap, Plastic	0.018MF	J 50V
C214	24206339	Cap, Electrolytic	3.3MF	M 50V
C215	24591222	Cap, Plastic	2200PF	J 50V
C216	24206010	Cap, Electrolytic	1MF	M 50V
C217	24436151	Cap, Ceramic	150PF	J 50V
C218	24474103	Cap, Ceramic	0.01MF	N 16V
C219	24474103	Cap, Ceramic	0.01MF	N 16V
C220	24474103	Cap, Ceramic	0.01MF	N 16V
C221	24353470	Cap, Ceramic	47PF	J 50V
C222	24472100	Cap, Ceramic	10PF	J 50V
C223	24472100	Cap, Ceramic	10PF	J 50V
C224	24353470	Cap, Ceramic	47PF	J 50V
C225	24206010	Cap, Electrolytic	1MF	M 50V
C226	24201470	Cap, Electrolytic	47MF	M 6.3V
C227	24538473	Cap, Plastic	0.047MF	J 50V
C228	24474103	Cap, Ceramic	0.01MF	N 16V
C229	24206010	Cap, Electrolytic	1MF	M 50V
C230	24473560	Cap, Ceramic	56PF	J 50V
C231	24538563	Cap, Plastic	0.056MF	J 50V
C232	24474103	Cap, Ceramic	0.01MF	N 16V
C233	24538153	Cap, Plastic	0.015MF	J 50V
C234	24232223	Cap, Ceramic	0.022MF	Z 50V
C235	24474103	Cap, Ceramic	0.01MF	N 16V
C236	24851104	Cap, Ceramic	0.1MF	K 25V
C237	24474103	Cap, Ceramic	0.01MF	N 16V
C238	24201220	Cap, Electrolytic	22MF	M 6.3V
C239	24436151	Cap, Ceramic	150PF	J 50V
C240	24206108	Cap, Electrolytic	0.1MF	M 50V
C241	24201470	Cap, Electrolytic	47MF	M 6.3V
C242	24201470	Cap, Electrolytic	47MF	M 6.3V
C243	24473180	Cap, Ceramic	18PF	J 50V
C244	24436820	Cap, Ceramic	82PF	J 50V
C245	24474103	Cap, Ceramic	0.01MF	N 16V
C246	24201470	Cap, Electrolytic	47MF	M 6.3V
C247	24206010	Cap, Electrolytic	1MF	M 50V
C248	24474103	Cap, Ceramic	0.01MF	N 16V
C249	24206229	Cap, Electrolytic	2.2MF	M 50V
C251	24093962	Cap, Variable		
C252	24093962	Cap, Variable		
C261	24206010	Cap, Electrolytic	1MF	M 50V
C262	24474103	Cap, Ceramic	0.01MF	N 16V
C264	24353121	Cap, Ceramic	120PF	J 50V
C265	24353121	Cap, Ceramic	120PF	J 50V
C266	24353220	Cap, Ceramic	22PF	J 50V
C267	24353820	Cap, Ceramic	82PF	J 50V
C268	24353330	Cap, Ceramic	33PF	J 50V
C269	24474103	Cap, Ceramic	0.01MF	N 16V
C270	24206010	Cap, Electrolytic	1MF	M 50V
C271	24474103	Cap, Ceramic	0.01MF	N 16V
C272	24206010	Cap, Electrolytic	1MF	M 50V
C273	24201470	Cap, Electrolytic	47MF	M 6.3V
C274	24474103	Cap, Ceramic	0.01MF	N 16V
C275	24206478	Cap, Electrolytic	0.47MF	M 50V
C276	24473829	Cap, Ceramic	8.2PF	K 50V
C277	24473829	Cap, Ceramic	8.2PF	K 50V
C278	24794470	Cap, Electrolytic	47MF	M 16V
C279	24793221	Cap, Electrolytic	220MF	M 10V
C280	24473100	Cap, Ceramic	10PF	J 50V
C281	24473330	Cap, Ceramic	33PF	J 50V
C282	24473100	Cap, Ceramic	10PF	J 50V
C283	24206010	Cap, Electrolytic	1MF	M 50V
C284	24203100	Cap, Electrolytic	10MF	M 16V
C285	24474103	Cap, Ceramic	0.01MF	N 16V
C286	24474103	Cap, Ceramic	0.01MF	N 16V

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
C287	24794470	Cap. Electrolytic	47MF	M 16V
C288	24474103	Cap, Ceramic	0.01MF	N 16V
C289	24794470	Cap. Electrolytic	47MF	M 16V
C290	24436181	Cap, Ceramic	180PF	J 50V
C291	24793101	Cap. Electrolytic	100MF	M 10V
C292	24793471	Cap. Electrolytic	470MF	M 10V
C293	24851104	Cap, Ceramic	0.1MF	K 25V
C294	24436820	Cap, Ceramic	82PF	J 50V
C295	24473510	Cap, Ceramic	51PF	J 50V
C296	24436121	Cap, Ceramic	120PF	J 50V
C297	24436201	Cap, Ceramic	200PF	J 50V
C298	24205479	Cap. Electrolytic	4.7MF	M 35V
C301	24474102	Cap, Ceramic	1000PF	K 50V
C302	24538223	Cap, Plastic	0.022MF	J 50V
C303	24201470	Cap. Electrolytic	47MF	M 6.3V
C304	24206478	Cap. Electrolytic	0.47MF	M 50V
C305	24201220	Cap. Electrolytic	22MF	M 6.3V
C306	24474102	Cap, Ceramic	1000PF	K 50V
C307	24474102	Cap, Ceramic	1000PF	K 50V
C308	24538223	Cap, Plastic	0.022MF	J 50V
C309	24201470	Cap. Electrolytic	47MF	M 6.3V
C310	24206478	Cap. Electrolytic	0.47MF	M 50V
C311	24474102	Cap, Ceramic	1000PF	K 50V
C312	24203100	Cap. Electrolytic	10MF	M 16V
C313	24202330	Cap. Electrolytic	33MF	M 10V
C314	24202330	Cap. Electrolytic	33MF	M 10V
C315	24473560	Cap, Ceramic	56PF	J 50V
C316	24085988	Cap. Electrolytic	1MF	M 50V
C317	24473390	Cap, Ceramic	39PF	J 50V
C381	24474103	Cap, Ceramic	0.01MF	N 16V
C382	24201470	Cap. Electrolytic	47MF	M 6.3V
C401	24591332	Cap, Plastic	3300PF	J 50V
C402	24591332	Cap, Plastic	3300PF	J 50V
C403	24206010	Cap. Electrolytic	1MF	M 50V
C404	24538103	Cap, Plastic	0.01MF	J 50V
C405	24436821	Cap, Ceramic	820PF	J 50V
C406	24474103	Cap, Ceramic	0.01MF	N 16V
C407	24201470	Cap. Electrolytic	47MF	M 6.3V
C408	24474103	Cap, Ceramic	0.01MF	N 16V
C409	24436820	Cap, Ceramic	82PF	J 50V
C410	24474103	Cap, Ceramic	0.01MF	N 16V
C411	24473560	Cap, Ceramic	56PF	J 50V
C412	24473560	Cap, Ceramic	56PF	J 50V
C413	24474103	Cap, Ceramic	0.01MF	N 16V
C414	24474103	Cap, Ceramic	0.01MF	N 16V
C415	24474103	Cap, Ceramic	0.01MF	N 16V
C416	24474103	Cap, Ceramic	0.01MF	N 16V
C417	24474103	Cap, Ceramic	0.01MF	N 16V
C418	24474103	Cap, Ceramic	0.01MF	N 16V
C419	24474103	Cap, Ceramic	0.01MF	N 16V
C420	24474103	Cap, Ceramic	0.01MF	N 16V
C421	24474103	Cap, Ceramic	0.01MF	N 16V
C422	24474103	Cap, Ceramic	0.01MF	N 16V
C423	24474103	Cap, Ceramic	0.01MF	N 16V
C424	24474103	Cap, Ceramic	0.01MF	N 16V
C425	24474103	Cap, Ceramic	0.01MF	N 16V
C426	24474103	Cap, Ceramic	0.01MF	N 16V
C427	24474103	Cap, Ceramic	0.01MF	N 16V
C428	24474103	Cap, Ceramic	0.01MF	N 16V
C429	24474103	Cap, Ceramic	0.01MF	N 16V
C430	24473470	Cap, Ceramic	47PF	J 50V
C431	24474103	Cap, Ceramic	0.01MF	N 16V
C432	24474103	Cap, Ceramic	0.01MF	N 16V
C433	24203100	Cap. Electrolytic	10MF	M 16V
C434	24474103	Cap, Ceramic	0.01MF	N 16V
C435	24201470	Cap. Electrolytic	47MF	M 6.3V
C436	24474103	Cap, Ceramic	0.01MF	N 16V
C437	24474103	Cap, Ceramic	0.01MF	N 16V
C438	24201470	Cap. Electrolytic	47MF	M 6.3V
C439	24474103	Cap, Ceramic	0.01MF	N 16V
C440	24474103	Cap, Ceramic	0.01MF	N 16V
C441	24474103	Cap, Ceramic	0.01MF	N 16V
C443	24473220	Cap, Ceramic	22PF	J 50V
C444	24474103	Cap, Ceramic	0.01MF	N 16V
C445	24474103	Cap, Ceramic	0.01MF	N 16V

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
C481	24794470	Cap. Electrolytic	47MF	M 16V
C730	24206010	Cap. Electrolytic	1MF	M 50V
C731	24591822	Cap, Plastic	8200PF	J 50V
C732	24591183	Cap, Plastic	0.018MF	J 50V
		- RESISTORS -		
R071	24366104	Res, Carbon	100K	J 1/6W
R072	24366122	Res, Carbon	1.2K	J 1/6W
R073	24366105	Res, Carbon	1M	J 1/6W
R074	24366224	Res, Carbon	220K	J 1/6W
R075	24366244	Res, Carbon	240K	J 1/6W
R076	24366224	Res, Carbon	220K	J 1/6W
R077	24366474	Res, Carbon	470K	J 1/6W
R078	24366334	Res, Carbon	330K	J 1/6W
R079	24366105	Res, Carbon	1M	J 1/6W
R080	24366272	Res, Carbon	2.7K	J 1/6W
R081	24366303	Res, Carbon	30K	J 1/6W
R082	24366103	Res, Carbon	10K	J 1/6W
R083	24366223	Res, Carbon	22K	J 1/6W
R084	24366153	Res, Carbon	15K	J 1/6W
R085	24366183	Res, Carbon	18K	J 1/6W
R086	24366273	Res, Carbon	27K	J 1/6W
R087	24366102	Res, Carbon	1K	J 1/6W
R090	24366102	Res, Carbon	1K	J 1/6W
R091	24366102	Res, Carbon	1K	J 1/6W
R092	24366162	Res, Carbon	1.6K	J 1/6W
R093	24366472	Res, Carbon	4.7K	J 1/6W
R094	24366102	Res, Carbon	1K	J 1/6W
R101	24366473	Res, Carbon	47K	J 1/6W
R102	24366472	Res, Carbon	4.7K	J 1/6W
R103	24366472	Res, Carbon	4.7K	J 1/6W
R104	24366333	Res, Carbon	33K	J 1/6W
R105	24366122	Res, Carbon	1.2K	J 1/6W
R106	24366333	Res, Carbon	33K	J 1/6W
R107	24366333	Res, Carbon	33K	J 1/6W
R108	24366102	Res, Carbon	1K	J 1/6W
R109	24366821	Res, Carbon	820	J 1/6W
R110	24366331	Res, Carbon	330	J 1/6W
R111	24366102	Res, Carbon	1K	J 1/6W
R112	24366332	Res, Carbon	3.3K	J 1/6W
R113	24366561	Res, Carbon	560	J 1/6W
R114	24366821	Res, Carbon	820	J 1/6W
R115	24366152	Res, Carbon	1.5K	J 1/6W
R116	24366102	Res, Carbon	1K	J 1/6W
R117	24366102	Res, Carbon	1K	J 1/6W
R118	24366222	Res, Carbon	2.2K	J 1/6W
R119	24366561	Res, Carbon	560	J 1/6W
R120	24366101	Res, Carbon	100	J 1/6W
R121	24366102	Res, Carbon	1K	J 1/6W
R122	24366101	Res, Carbon	100	J 1/6W
R123	24366333	Res, Carbon	33K	J 1/6W
R124	24366123	Res, Carbon	12K	J 1/6W
R125	24366241	Res, Carbon	240	J 1/6W
R126	24366182	Res, Carbon	1.8K	J 1/6W
R127	24366222	Res, Carbon	2.2K	J 1/6W
R128	24366182	Res, Carbon	1.8K	J 1/6W
R129	24366303	Res, Carbon	30K	J 1/6W
R130	24366103	Res, Carbon	10K	J 1/6W
R131	24366302	Res, Carbon	3K	J 1/6W
R132	24366681	Res, Carbon	680	J 1/6W
R133	24366471	Res, Carbon	470	J 1/6W
R134	24366432	Res, Carbon	4.3K	J 1/6W
R135	24366102	Res, Carbon	1K	J 1/6W
R136	24366563	Res, Carbon	56K	J 1/6W
R158	24066954	Res. Variable	2K	
R181	24366102	Res, Carbon	1K	J 1/6W
R182	24366102	Res, Carbon	1K	J 1/6W
R183	24366562	Res, Carbon	5.6K	J 1/6W
R184	24366102	Res, Carbon	1K	J 1/6W
R185	24366681	Res, Carbon	680	J 1/6W
R186	24366152	Res, Carbon	1.5K	J 1/6W
R187	24366681	Res, Carbon	680	J 1/6W
R188	24366223	Res, Carbon	22K	J 1/6W
R189	24366103	Res, Carbon	10K	J 1/6W
R190	24366122	Res, Carbon	1.2K	J 1/6W
R191	24366272	Res, Carbon	2.7K	J 1/6W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
R192	24366102	Res, Carbon	1K	J 1/6W
R193	24366122	Res, Carbon	1.2K	J 1/6W
R201	24366224	Res, Carbon	220K	J 1/6W
R203	24366512	Res, Carbon	5.1K	J 1/6W
R204	24366472	Res, Carbon	4.7K	J 1/6W
R205	24366102	Res, Carbon	1K	J 1/6W
R206	24366203	Res, Carbon	20K	J 1/6W
R208	24366224	Res, Carbon	220K	J 1/6W
R210	24366152	Res, Carbon	1.5K	J 1/6W
R211	24366391	Res, Carbon	390	J 1/6W
R214	24366103	Res, Carbon	10K	J 1/6W
R215	24366243	Res, Carbon	24K	J 1/6W
R217	24366681	Res, Carbon	680	J 1/6W
R218	24366102	Res, Carbon	1K	J 1/6W
R219	24366102	Res, Carbon	1K	J 1/6W
R221	24366471	Res, Carbon	470	J 1/6W
R222	24366123	Res, Carbon	12K	J 1/6W
R223	24366822	Res, Carbon	8.2K	J 1/6W
R224	24366103	Res, Carbon	10K	J 1/6W
R225	24366221	Res, Carbon	220	J 1/6W
R226	24366102	Res, Carbon	1K	J 1/6W
R227	24366472	Res, Carbon	4.7K	J 1/6W
R228	24366183	Res, Carbon	18K	J 1/6W
R229	24366102	Res, Carbon	1K	J 1/6W
R230	24366102	Res, Carbon	1K	J 1/6W
R231	24366472	Res, Carbon	4.7K	J 1/6W
R232	24366102	Res, Carbon	1K	J 1/6W
R233	24366103	Res, Carbon	10K	J 1/6W
R234	24366223	Res, Carbon	22K	J 1/6W
R235	24366474	Res, Carbon	470K	J 1/6W
R236	24366102	Res, Carbon	1K	J 1/6W
R237	24366393	Res, Carbon	39K	J 1/6W
R238	24366683	Res, Carbon	68K	J 1/6W
R239	24366564	Res, Carbon	560K	J 1/6W
R240	24366103	Res, Carbon	10K	J 1/6W
R241	24366103	Res, Carbon	10K	J 1/6W
R242	24366103	Res, Carbon	10K	J 1/6W
R243	24366203	Res, Carbon	20K	J 1/6W
R244	24366122	Res, Carbon	1.2K	J 1/6W
R245	24366821	Res, Carbon	820	J 1/6W
R246	24366751	Res, Carbon	750	J 1/6W
R247	24366222	Res, Carbon	2.2K	J 1/6W
R248	24000952	Res, Thermistor	3K	
R249	24366751	Res, Carbon	750	J 1/6W
R251	24066951	Res, Variable	20K	
R252	24066951	Res, Variable	20K	
R255	24066952	Res, Variable	10K	
R256	24066952	Res, Variable	10K	
R257	24066954	Res, Variable	2K	
R259	24066953	Res, Variable	100K	
R261	24366102	Res, Carbon	1K	J 1/6W
R262	24366471	Res, Carbon	470	J 1/6W
R263	24366680	Res, Carbon	68	J 1/6W
R264	24366103	Res, Carbon	10K	J 1/6W
R265	24366332	Res, Carbon	3.3K	J 1/6W
R266	24366222	Res, Carbon	2.2K	J 1/6W
R267	24366103	Res, Carbon	10K	J 1/6W
R269	24366102	Res, Carbon	1K	J 1/6W
R270	24366511	Res, Carbon	510	J 1/6W
R271	24366272	Res, Carbon	2.7K	J 1/6W
R272	24366101	Res, Carbon	100	J 1/6W
R273	24366102	Res, Carbon	1K	J 1/6W
R274	24366751	Res, Carbon	750	J 1/6W
R276	24000952	Res, Thermistor	3K	
R277	24366103	Res, Carbon	10K	J 1/6W
R278	24366473	Res, Carbon	47K	J 1/6W
R279	24366471	Res, Carbon	470	J 1/6W
R280	24366122	Res, Carbon	1.2K	J 1/6W
R281	24366152	Res, Carbon	1.5K	J 1/6W
R283	24366222	Res, Carbon	2.2K	J 1/6W
R284	24366332	Res, Carbon	3.3K	J 1/6W
R285	24366103	Res, Carbon	10K	J 1/6W
R286	24366105	Res, Carbon	1M	J 1/6W
R287	24366183	Res, Carbon	18K	J 1/6W
R288	24366103	Res, Carbon	10K	J 1/6W
R289	24366332	Res, Carbon	3.3K	J 1/6W
R290	24366331	Res, Carbon	330	J 1/6W
R291	24366331	Res, Carbon	330	J 1/6W
R292	24366391	Res, Carbon	390	J 1/6W
R293	24366561	Res, Carbon	560	J 1/6W
R294	24366101	Res, Carbon	100	J 1/6W
R295	24366680	Res, Carbon	68	J 1/6W
R296	24366820	Res, Carbon	82	J 1/6W
R297	24366102	Res, Carbon	1K	J 1/6W
R298	24366184	Res, Carbon	180K	J 1/6W
R301	24366103	Res, Carbon	10K	J 1/6W
R302	24366152	Res, Carbon	1.5K	J 1/6W
R303	24366103	Res, Carbon	10K	J 1/6W
R304	24366222	Res, Carbon	2.2K	J 1/6W
R305	24366221	Res, Carbon	220	J 1/6W
R306	24366154	Res, Carbon	150K	J 1/6W
R307	24366223	Res, Carbon	22K	J 1/6W
R308	24366103	Res, Carbon	10K	J 1/6W
R309	24366102	Res, Carbon	1K	J 1/6W
R310	24366152	Res, Carbon	1.5K	J 1/6W
R311	24366152	Res, Carbon	1.5K	J 1/6W
R312	24366222	Res, Carbon	2.2K	J 1/6W
R313	24366111	Res, Carbon	110	J 1/6W
R314	24366154	Res, Carbon	150K	J 1/6W
R315	24366103	Res, Carbon	10K	J 1/6W
R316	24366223	Res, Carbon	22K	J 1/6W
R317	24366472	Res, Carbon	4.7K	J 1/6W
R318	24366222	Res, Carbon	2.2K	J 1/6W
R319	24366472	Res, Carbon	4.7K	J 1/6W
R320	24366471	Res, Carbon	470	J 1/6W
R351	24066954	Res, Variable	2K	
R352	24066947	Res, Variable	500K	
R361	24366102	Res, Carbon	1K	J 1/6W
R363	24366511	Res, Carbon	510	J 1/6W
R364	24366203	Res, Carbon	20K	J 1/6W
R365	24366333	Res, Carbon	33K	J 1/6W
R367	24366274	Res, Carbon	270K	J 1/6W
R368	24366472	Res, Carbon	4.7K	J 1/6W
R369	24366221	Res, Carbon	220	J 1/6W
R370	24366103	Res, Carbon	10K	J 1/6W
R371	24366473	Res, Carbon	47K	J 1/6W
R372	24366103	Res, Carbon	10K	J 1/6W
R374	24366103	Res, Carbon	10K	J 1/6W
R376	24366472	Res, Carbon	4.7K	J 1/6W
R377	24366472	Res, Carbon	4.7K	J 1/6W
R378	24366472	Res, Carbon	4.7K	J 1/6W
R379	24366472	Res, Carbon	4.7K	J 1/6W
R380	24366221	Res, Carbon	220	J 1/6W
R381	24366102	Res, Carbon	1K	J 1/6W
R382	24366102	Res, Carbon	1K	J 1/6W
R383	24366514	Res, Carbon	510K	J 1/6W
R384	24366331	Res, Carbon	330	J 1/6W
R386	24366472	Res, Carbon	4.7K	J 1/6W
R387	24366102	Res, Carbon	1K	J 1/6W
R401	24366102	Res, Carbon	1K	J 1/6W
R402	24366203	Res, Carbon	20K	J 1/6W
R403	24366152	Res, Carbon	1.5K	J 1/6W
R404	24366203	Res, Carbon	20K	J 1/6W
R405	24366303	Res, Carbon	30K	J 1/6W
R406	24366203	Res, Carbon	20K	J 1/6W
R407	24366472	Res, Carbon	4.7K	J 1/6W
R408	24366152	Res, Carbon	1.5K	J 1/6W
R409	24366621	Res, Carbon	620	J 1/6W
R410	24366621	Res, Carbon	620	J 1/6W
R411	24366910	Res, Carbon	91	J 1/6W
R412	24366102	Res, Carbon	1K	J 1/6W
R413	24366471	Res, Carbon	470	J 1/6W
R414	24366183	Res, Carbon	18K	J 1/6W
R415	24366822	Res, Carbon	8.2K	J 1/6W
R416	24366101	Res, Carbon	100	J 1/6W
R417	24366132	Res, Carbon	1.3K	J 1/6W
R418	24366333	Res, Carbon	33K	J 1/6W
R419	24366273	Res, Carbon	27K	J 1/6W
R420	24366821	Res, Carbon	820	J 1/6W
R421	24366272	Res, Carbon	2.7K	J 1/6W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
R422	24366103	Res, Carbon	10K	J 1/6W
R423	24366821	Res, Carbon	820	J 1/6W
R424	24366272	Res, Carbon	2.7K	J 1/6W
R425	24366103	Res, Carbon	10K	J 1/6W
R426	24366102	Res, Carbon	1K	J 1/6W
R428	24366271	Res, Carbon	270	J 1/6W
R429	24366102	Res, Carbon	1K	J 1/6W
R432	24366821	Res, Carbon	820	J 1/6W
R433	24366333	Res, Carbon	33K	J 1/6W
R434	24366333	Res, Carbon	33K	J 1/6W
R435	24366103	Res, Carbon	10K	J 1/6W
R436	24366682	Res, Carbon	6.8K	J 1/6W
R437	24366222	Res, Carbon	2.2K	J 1/6W
R438	24366271	Res, Carbon	270	J 1/6W
R439	24366272	Res, Carbon	2.7K	J 1/6W
R440	24366103	Res, Carbon	10K	J 1/6W
R441	24366183	Res, Carbon	18K	J 1/6W
R442	24366102	Res, Carbon	1K	J 1/6W
R443	24366471	Res, Carbon	470	J 1/6W
R444	24366102	Res, Carbon	1K	J 1/6W
R445	24366681	Res, Carbon	680	J 1/6W
R446	24366102	Res, Carbon	1K	J 1/6W
R447	24366102	Res, Carbon	1K	J 1/6W
R448	24366472	Res, Carbon	4.7K	J 1/6W
R449	24366101	Res, Carbon	100	J 1/6W
R451	24066953	Res, Variable	100K	
R452	24066953	Res, Variable	100K	
R459	24066956	Res, Variable	500	
R461	24366472	Res, Carbon	4.7K	J 1/6W
R462	24366472	Res, Carbon	4.7K	J 1/6W
R463	24366102	Res, Carbon	1K	J 1/6W
R464	24366223	Res, Carbon	22K	J 1/6W
R465	24366621	Res, Carbon	620	J 1/6W
R466	24366104	Res, Carbon	100K	J 1/6W
R467	24366472	Res, Carbon	4.7K	J 1/6W
R468	24366472	Res, Carbon	4.7K	J 1/6W
R469	24366223	Res, Carbon	22K	J 1/6W
R470	24366223	Res, Carbon	22K	J 1/6W
R471	24366821	Res, Carbon	820	J 1/6W
R472	24366223	Res, Carbon	22K	J 1/6W
R473	24366271	Res, Carbon	270	J 1/6W
R474	24366751	Res, Carbon	750	J 1/6W
R475	24366361	Res, Carbon	360	J 1/6W
R476	24366471	Res, Carbon	470	J 1/6W
R477	24366511	Res, Carbon	510	J 1/6W
R481	24366471	Res, Carbon	470	J 1/6W
R482	24366821	Res, Carbon	820	J 1/6W
R730	24366684	Res, Carbon	680K	J 1/6W
R731	24366563	Res, Carbon	56K	J 1/6W
R732	24366242	Res, Carbon	2.4K	J 1/6W
R733	24366122	Res, Carbon	1.2K	J 1/6W
R734	24366391	Res, Carbon	390	J 1/6W
R735	24366103	Res, Carbon	10K	J 1/6W
R736	24366302	Res, Carbon	3K	J 1/6W
R738	24366241	Res, Carbon	240	J 1/6W
R741	24366562	Res, Carbon	5.6K	J 1/6W
R751	24066739	Res, Variable	10K	
R752	24066743	Res, Variable	200K	
		- MISCELLANEOUS -		
P250	23365627	Phono Jack	4P	
S001	23145404	Slide Switch, 2C3P		
S203	23145409	Slide Switch	2C2P	
V204	70867457	Spacer		
X201	70153037	Crystal, 3.58MHz		
X202	23153979	Crystal, 4.43MHz		
X203	23153770	Crystal		
X204	23153899	Crystal		
Z001	24000787	Res, Block	4.7K	J 1/8W
Z201	23107631	Filter, 3.2MHz, TLC1126N		
Z301	23107980	Filter	4.5MHz	
Z302	23107980	Filter	4.5MHz	
Z401	70138117	Filter		
Z402	70138131	Filter		
Z403	70138128	Filter		

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
■U801	70188777	P C Board Assy	Converter 1	
		- DIODES -		
⚠D801	23118124	Diode (SID BRG)	LB-156 LF-B	
D802	A7568200	Diode	1S1832	
D810	70115449	Diode	S3LA20(S)	
D811	70115449	Diode	S3LA20(S)	
D813	A7978850	Diode	S5295G	
		- COILS -		
L801	70211045	Coil, Choke		
		- CAPACITORS -		
⚠C801	70416068	Cap, Plastic	0.1MF	M 250V
⚠C802	24094653	Cap, Ceramic	220PF	M 400V
⚠C803	24094653	Cap, Ceramic	220PF	M 400V
C804	24086931	Cap, Electrolytic	8200MF	M 450V
C805	24095817	Cap, Plastic	0.027MF	K 630V
C806	24215101	Cap, Ceramic	100PF	K 1KV
⚠C814	24094655	Cap, Ceramic	1000PF	M 400V
⚠C820	24617884	Cap, Electrolytic	1000MF	M 25V
⚠C822	24617931	Cap, Electrolytic	1200MF	M 10V
C823	24202101	Cap, Electrolytic	100MF	M 10V
C831	24204470	Cap, Electrolytic	47MF	M 25V
C832	24214221	Cap, Ceramic	220PF	K 500V
C833	24214221	Cap, Ceramic	220PF	K 500V
		- RESISTORS -		
R801	24376154	Res, Carbon	150K	J 1/2W
R803	24554563	Res, Oxide Metal	56K	J 2W
R809	24321338	Res, Oxide Metal	0.33	J 1/2W
R810	24007487	Res, Cement	2.2	J 2W
⚠R811	24556159	Res, Fusible	1.5	K 1/2W
⚠R821	24000317	Res, Fusible	1	J 1/4W
		- MISCELLANEOUS -		
⚠F801	23144129	Fuse, 2A		
⚠F801A	23165102	Fuse Holder		
⚠F802	23144970	Fuse, 1.6A		
⚠F802A	23165102	Fuse Holder		
⚠F803	23144836	Fuse, 125V, 1.6A		
⚠T801	70213157	Transformer, VPW8901M		
⚠T831	23211864	Coil, Linefilter	TRF3144	
■UL01	70188778	P C Board Assy	Logic SW	
		- DIODES -		
DX07	A7160590	Diode	1SS177	
DX08	A7160590	Diode	1SS177	
DX09	A7160590	Diode	1SS177	
DX10	A7160590	Diode	1SS177	
DX11	A7160590	Diode	1SS177	
DX12	A7160590	Diode	1SS177	
DX13	A7160590	Diode	1SS177	
DX14	A7160590	Diode	1SS177	
DX34	A8606316	Diode, LED	TLG133A-FA	
		- MISCELLANEOUS -		
PX01B	23902605	Socket, 12P		
SL09	23344094	Push Switch		
SX01	23145394	Push Switch, 1C1P		
SX02	23145394	Push Switch, 1C1P		
SX03	23145394	Push Switch, 1C1P		
SX04	23145394	Push Switch, 1C1P		
SX06	23145394	Push Switch, 1C1P		
SX07	23145394	Push Switch, 1C1P		
SX08	23145394	Push Switch, 1C1P		
SX09	23145394	Push Switch, 1C1P		
SX10	23145394	Push Switch, 1C1P		
SX11	23145394	Push Switch, 1C1P		
SX12	23145394	Push Switch, 1C1P		
SX13	23145394	Push Switch, 1C1P		
SX20	23344094	Push Switch		
SX29	23145394	Push Switch, 1C1P		
■U602	70188779	P C Board Assy	Sub Main	
		- INTEGRATED CIRCUITS -		
IC501	70128515	IC	TMP91C642N3052Z	
IC502	70119581	IC	NJM2902N	
IC503	B0349260	IC	TA75393P	
IC602	70128007	IC	MC14013BCP	
IC603	B0320660	IC	TA7291P	

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
IC604	B0349260	IC	TA75393P	
IC605	70128387	IC	PST572D	
ICX82	70128386	IC	PST572C	
		- TRANSISTORS -		
Q090	A6534430	Transistor	2SA1048-Y	
Q511	A6868350	Transistor	2SD1413	
Q512	A6868350	Transistor	2SD1413	
Q513	A6002040	Transistor	RN1204	
Q520	A6002040	Transistor	RN1204	
Q521	A6332540	Transistor	2SC2668-Y	
Q522	A6332540	Transistor	2SC2668-Y	
Q523	A6332430	Transistor	2SC2458-Y	
Q524	A6002040	Transistor	RN1204	
Q525	A6534430	Transistor	2SA1048-Y	
Q530	A6012020	Transistor	RN2202	
Q532	A6012020	Transistor	RN2202	
Q613	A6533247	Transistor	2SA966-Y	
Q614	A6534430	Transistor	2SA1048-Y	
Q615	A6534430	Transistor	2SA1048-Y	
Q617	A6533247	Transistor	2SA966-Y	
Q618	A6002040	Transistor	RN1204	
Q619	A6332430	Transistor	2SC2458-Y	
Q620	A6002040	Transistor	RN1204	
Q621	A6002040	Transistor	RN1204	
Q622	A6002010	Transistor	RN1201	
		- DIODES -		
D090	A7160570	Diode	1SS176	
D091	A7160570	Diode	1SS176	
D501	A7117325	Diode,Zener	04AZ13Z	
D505	23316270	Diode	DA218S	
D506	A7151450	Diode	1SS200	
D507	A7160570	Diode	1SS176	
D601	A7160570	Diode	1SS176	
D602	A7160570	Diode	1SS176	
D603	A7160570	Diode	1SS176	
D604	A7160570	Diode	1SS176	
DX60	A7160570	Diode	1SS176	
		- COILS -		
L501	23237983	Coil,Peaking	TRF4220AC	
L502	23237977	Coil,Peaking	TRF4680AC	
L503	23103961	Coil,Choke	2BF253D-01	
L504	23103961	Coil,Choke	2BF253D-01	
L505	23103961	Coil,Choke	2BF253D-01	
L506	23103961	Coil,Choke	2BF253D-01	
L507	23103961	Coil,Choke	2BF253D-01	
L841	23238653	Coil,Peaking	TRF4470AI	
		- CAPACITORS -		
C090	24797101	Cap,Electrolytic	100MF	M 50V
C501	24203100	Cap,Electrolytic	10MF	M 16V
C502	24353220	Cap,Ceramic	22PF	J 50V
C503	24353220	Cap,Ceramic	22PF	J 50V
C504	24591473	Cap,Plastic	0.047MF	J 50V
C505	24474103	Cap,Ceramic	0.01MF	N 16V
C506	24591103	Cap,Plastic	0.01MF	J 50V
C507	24591103	Cap,Plastic	0.01MF	J 50V
C508	24591102	Cap,Plastic	1000PF	J 50V
C509	24591102	Cap,Plastic	1000PF	J 50V
C511	24474102	Cap,Ceramic	1000PF	K 50V
C512	24474102	Cap,Ceramic	1000PF	K 50V
C513	24794101	Cap,Electrolytic	100MF	M 16V
C514	24794101	Cap,Electrolytic	100MF	M 16V
C515	24206229	Cap,Electrolytic	2.2MF	M 50V
C520	24794470	Cap,Electrolytic	47MF	M 16V
C521	24474332	Cap,Ceramic	3300PF	N 16V
C522	24794470	Cap,Electrolytic	47MF	M 16V
C523	24474103	Cap,Ceramic	0.01MF	N 16V
C524	24474561	Cap,Ceramic	560PF	K 50V
C525	24473470	Cap,Ceramic	47PF	J 50V
C526	24085987	Cap,Electrolytic	4.7MF	M 16V
C527	24591243	Cap,Plastic	0.024MF	J 50V
C531	24203100	Cap,Electrolytic	10MF	M 16V
C532	24474103	Cap,Ceramic	0.01MF	N 16V
C538	24538104	Cap,Plastic	0.1MF	J 50V
C540	24474103	Cap,Ceramic	0.01MF	N 16V
C541	24793101	Cap,Electrolytic	100MF	M 10V
C542	24538104	Cap,Plastic	0.1MF	J 50V
C543	24538104	Cap,Plastic	0.1MF	J 50V
C544	24474103	Cap,Ceramic	0.01MF	N 16V
C545	24436101	Cap,Ceramic	100PF	J 50V
C546	24474103	Cap,Ceramic	0.01MF	N 16V
C560	24474331	Cap,Ceramic	330PF	K 50V
C561	24206229	Cap,Electrolytic	2.2MF	M 50V
C562	24474331	Cap,Ceramic	330PF	K 50V
C563	24206229	Cap,Electrolytic	2.2MF	M 50V
C564	24474103	Cap,Ceramic	0.01MF	N 16V
C565	24206010	Cap,Electrolytic	1MF	M 50V
C567	24203220	Cap,Electrolytic	22MF	M 16V
C568	24474101	Cap,Ceramic	100PF	K 50V
C602	24474103	Cap,Ceramic	0.01MF	N 16V
C603	24794101	Cap,Electrolytic	100MF	M 16V
C604	24232223	Cap,Ceramic	0.022MF	Z 50V
C605	24206010	Cap,Electrolytic	1MF	M 50V
C610	24474103	Cap,Ceramic	0.01MF	N 16V
C613	24794470	Cap,Electrolytic	47MF	M 16V
C617	24792331	Cap,Electrolytic	330MF	M 6.3V
C619	24206010	Cap,Electrolytic	1MF	M 50V
C620	24538104	Cap,Plastic	0.1MF	J 50V
C621	24474103	Cap,Ceramic	0.01MF	N 16V
C841	24793101	Cap,Electrolytic	100MF	M 10V
CX60	24090979	Cap,Super	0.047F	Z 5.5V
CX61	24792471	Cap,Electrolytic	470MF	M 6.3V
		- RESISTORS -		
R095	24367121	Res,Carbon	120	G 1/6W
R096	24366363	Res,Carbon	36K	J 1/6W
R501	24366472	Res,Carbon	4.7K	J 1/6W
R502	24366472	Res,Carbon	4.7K	J 1/6W
R503	24366163	Res,Carbon	16K	J 1/6W
R504	24366432	Res,Carbon	4.3K	J 1/6W
R505	24366202	Res,Carbon	2K	J 1/6W
R506	24366114	Res,Carbon	110K	J 1/6W
R507	24366114	Res,Carbon	110K	J 1/6W
R508	24366473	Res,Carbon	47K	J 1/6W
R509	24366473	Res,Carbon	47K	J 1/6W
R510	24366472	Res,Carbon	4.7K	J 1/6W
R511	24366472	Res,Carbon	4.7K	J 1/6W
R512	24366163	Res,Carbon	16K	J 1/6W
R513	24366472	Res,Carbon	4.7K	J 1/6W
R520	24366472	Res,Carbon	4.7K	J 1/6W
R521	24366152	Res,Carbon	1.5K	J 1/6W
R522	24366122	Res,Carbon	1.2K	J 1/6W
R523	24366331	Res,Carbon	330	J 1/6W
R524	24366105	Res,Carbon	1M	J 1/6W
R525	24366182	Res,Carbon	1.8K	J 1/6W
R526	24366203	Res,Carbon	20K	J 1/6W
R527	24366105	Res,Carbon	1M	J 1/6W
R528	24366623	Res,Carbon	62K	J 1/6W
R529	24366753	Res,Carbon	75K	J 1/6W
R530	24366754	Res,Carbon	750K	J 1/6W
R531	24366223	Res,Carbon	22K	J 1/6W
R532	24366222	Res,Carbon	2.2K	J 1/6W
R533	24366753	Res,Carbon	75K	J 1/6W
R534	24366333	Res,Carbon	33K	J 1/6W
R535	24366361	Res,Carbon	360	J 1/6W
R536	24366472	Res,Carbon	4.7K	J 1/6W
R537	24366472	Res,Carbon	4.7K	J 1/6W
R538	24366101	Res,Carbon	100	J 1/6W
R539	24366821	Res,Carbon	820	J 1/6W
R540	24366151	Res,Carbon	150	J 1/6W
R541	24366123	Res,Carbon	12K	J 1/6W
R542	24366103	Res,Carbon	10K	J 1/6W
R543	24366151	Res,Carbon	150	J 1/6W
R544	24366473	Res,Carbon	47K	J 1/6W
R545	24366682	Res,Carbon	6.8K	J 1/6W
R546	24366391	Res,Carbon	390	J 1/6W
R547	24366560	Res,Carbon	56	J 1/6W
R548	24366103	Res,Carbon	10K	J 1/6W
R549	24366222	Res,Carbon	2.2K	J 1/6W
R560	24366182	Res,Carbon	1.8K	J 1/6W
R561	24366473	Res,Carbon	47K	J 1/6W
R562	24366473	Res,Carbon	47K	J 1/6W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
R563	24941275	Res, Composition	2.7M	J 1/4W
R564	24366392	Res, Carbon	3.9K	J 1/6W
R565	24366392	Res, Carbon	3.9K	J 1/6W
R566	24366822	Res, Carbon	8.2K	J 1/6W
R567	24366182	Res, Carbon	1.8K	J 1/6W
R568	24366563	Res, Carbon	56K	J 1/6W
R569	24366242	Res, Carbon	2.4K	J 1/6W
R570	24366362	Res, Carbon	3.6K	J 1/6W
R571	24366473	Res, Carbon	47K	J 1/6W
R572	24366473	Res, Carbon	47K	J 1/6W
R573	24941275	Res, Composition	2.7M	J 1/4W
R574	24366392	Res, Carbon	3.9K	J 1/6W
R575	24366392	Res, Carbon	3.9K	J 1/6W
R576	24366822	Res, Carbon	8.2K	J 1/6W
R577	24366222	Res, Carbon	2.2K	J 1/6W
R578	24000525	Res, Metal	4.7K	F 1/4W
R579	24000525	Res, Metal	4.7K	F 1/4W
R580	24366102	Res, Carbon	1K	J 1/6W
R581	24366102	Res, Carbon	1K	J 1/6W
R582	24366102	Res, Carbon	1K	J 1/6W
R583	24366102	Res, Carbon	1K	J 1/6W
R585	24366102	Res, Carbon	1K	J 1/6W
R586	24366103	Res, Carbon	10K	J 1/6W
R587	24366102	Res, Carbon	1K	J 1/6W
R588	24366103	Res, Carbon	10K	J 1/6W
R589	24366103	Res, Carbon	10K	J 1/6W
R603	24366473	Res, Carbon	47K	J 1/6W
R604	24366102	Res, Carbon	1K	J 1/6W
R605	24366102	Res, Carbon	1K	J 1/6W
R606	24366134	Res, Carbon	130K	J 1/6W
R607	24366822	Res, Carbon	8.2K	J 1/6W
R608	24366914	Res, Carbon	910K	J 1/6W
R609	24366304	Res, Carbon	300K	J 1/6W
R613	24366103	Res, Carbon	10K	J 1/6W
R614	24366103	Res, Carbon	10K	J 1/6W
R615	24366183	Res, Carbon	18K	J 1/6W
R616	24366183	Res, Carbon	18K	J 1/6W
R617	24366472	Res, Carbon	4.7K	J 1/6W
R618	24366102	Res, Carbon	1K	J 1/6W
R619	24366102	Res, Carbon	1K	J 1/6W
R620	24366332	Res, Carbon	3.3K	J 1/6W
R621	24366682	Res, Carbon	6.8K	J 1/6W
R622	24366102	Res, Carbon	1K	J 1/6W
R623	24366472	Res, Carbon	4.7K	J 1/6W
R624	24366472	Res, Carbon	4.7K	J 1/6W
R625	24366472	Res, Carbon	4.7K	J 1/6W
R626	24366223	Res, Carbon	22K	J 1/6W
R629	24366243	Res, Carbon	24K	J 1/6W
R630	24366223	Res, Carbon	22K	J 1/6W
R631	24366472	Res, Carbon	4.7K	J 1/6W
R632	24366472	Res, Carbon	4.7K	J 1/6W
R633	24366472	Res, Carbon	4.7K	J 1/6W
R641	24366223	Res, Carbon	22K	J 1/6W
R642	24366103	Res, Carbon	10K	J 1/6W
R643	24366473	Res, Carbon	47K	J 1/6W
R644	24366105	Res, Carbon	1M	J 1/6W
R645	24366562	Res, Carbon	5.6K	J 1/6W
R646	24366333	Res, Carbon	33K	J 1/6W
R647	24366472	Res, Carbon	4.7K	J 1/6W
R660	24366103	Res, Carbon	10K	J 1/6W
R661	24366101	Res, Carbon	100	J 1/6W
R662	24366101	Res, Carbon	100	J 1/6W
R663	24366101	Res, Carbon	100	J 1/6W
R664	24366102	Res, Carbon	1K	J 1/6W
R665	24366102	Res, Carbon	1K	J 1/6W
R666	24366103	Res, Carbon	10K	J 1/6W
R670	24366101	Res, Carbon	100	J 1/6W
R671	24366103	Res, Carbon	10K	J 1/6W
R672	24366473	Res, Carbon	47K	J 1/6W
R673	24366472	Res, Carbon	4.7K	J 1/6W
R674	24366472	Res, Carbon	4.7K	J 1/6W
R675	24366472	Res, Carbon	4.7K	J 1/6W
R676	24366101	Res, Carbon	100	J 1/6W
R677	24366103	Res, Carbon	10K	J 1/6W
R678	24366103	Res, Carbon	10K	J 1/6W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
R679	24366472	Res, Carbon	4.7K	J 1/6W
R681	24366102	Res, Carbon	1K	J 1/6W
R682	24366102	Res, Carbon	1K	J 1/6W
R683	24366472	Res, Carbon	4.7K	J 1/6W
R684	24366152	Res, Carbon	1.5K	J 1/6W
R685	24366472	Res, Carbon	4.7K	J 1/6W
R686	24366102	Res, Carbon	1K	J 1/6W
R687	24366101	Res, Carbon	100	J 1/6W
R688	24366472	Res, Carbon	4.7K	J 1/6W
R689	24366472	Res, Carbon	4.7K	J 1/6W
R690	24366472	Res, Carbon	4.7K	J 1/6W
R691	24366472	Res, Carbon	4.7K	J 1/6W
RX69	24366301	Res, Carbon	300	J 1/6W
RX75	24366472	Res, Carbon	4.7K	J 1/6W
RX77	24366151	Res, Carbon	150	J 1/6W
		- MISCELLANEOUS -		
P504	23368095	Plug	4P	
P601	23901261	Socket, 18P		
P603	23901256	Socket	13P	
Q512C	23721308	Screw, 3x8mm		
X501	23153759	Crystal		
⚠Z612	23118122	IC Protector, ICP-N5		
⚠Z613	23118122	IC Protector, ICP-N5		
Z801	23107550	DC-DC Converter, CTX006		
⚠Z802	23118132	IC Protector	ICP-N10	
■UV01	70188780	P C Board Assy	Pre Amp	
		- INTEGRATED CIRCUITS -		
ICV01	70128508	IC	AN3385NK-A	
		- TRANSISTORS -		
QV02	A6332430	Transistor	2SC2458-Y	
QV03	A6332430	Transistor	2SC2458-Y	
		- DIODES -		
DV01	A7160570	Diode	1SS176	
		- COILS -		
LV01	23289470	Coil, Peaking	TRF4470AF	
LV02	23289101	Coil, Peaking	TRF4101AF	
LV03	23238705	Coil, Peaking	TRF4560AJ	
LV04	23289271	Coil, Peaking	TRF4271AF	
		- CAPACITORS -		
CV01	24206228	Cap, Electrolytic	0.22MF	M 50V
CV02	24538104	Cap, Plastic	0.1MF	J 50V
CV03	24538104	Cap, Plastic	0.1MF	J 50V
CV04	24206228	Cap, Electrolytic	0.22MF	M 50V
CV05	24206108	Cap, Electrolytic	0.1MF	M 50V
CV06	24206228	Cap, Electrolytic	0.22MF	M 50V
CV07	24538104	Cap, Plastic	0.1MF	J 50V
CV08	24538104	Cap, Plastic	0.1MF	J 50V
CV09	24206108	Cap, Electrolytic	0.1MF	M 50V
CV10	24206228	Cap, Electrolytic	0.22MF	M 50V
CV11	24474103	Cap, Ceramic	0.01MF	N 16V
CV12	24201470	Cap, Electrolytic	47MF	M 6.3V
CV13	24201470	Cap, Electrolytic	47MF	M 6.3V
CV14	24206010	Cap, Electrolytic	1MF	M 50V
CV15	24436101	Cap, Ceramic	100PF	J 50V
CV16	24851223	Cap, Ceramic	0.022MF	K 25V
CV17	24538104	Cap, Plastic	0.1MF	J 50V
CV18	24707685	Cap, Tantalum	6.8MF	M 35V
CV19	24203470	Cap, Electrolytic	47MF	M 16V
CV20	24436101	Cap, Ceramic	100PF	J 50V
CV21	24474103	Cap, Ceramic	0.01MF	N 16V
CV22	24473470	Cap, Ceramic	47PF	J 50V
CV23	24473470	Cap, Ceramic	47PF	J 50V
CV24	24473330	Cap, Ceramic	33PF	J 50V
CV25	24473330	Cap, Ceramic	33PF	J 50V
CV26	24474103	Cap, Ceramic	0.01MF	N 16V
CV27	24436101	Cap, Ceramic	100PF	J 50V
CV28	24436131	Cap, Ceramic	130PF	J 50V
CV29	24474103	Cap, Ceramic	0.01MF	N 16V
CV30	24473680	Cap, Ceramic	68PF	J 50V
CV31	24473470	Cap, Ceramic	47PF	J 50V
CV32	24473680	Cap, Ceramic	68PF	J 50V
CV33	24436820	Cap, Ceramic	82PF	J 50V
		- RESISTORS -		
RV01	24366391	Res, Carbon	390	J 1/6W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
RV02	24366471	Res, Carbon	470	J 1/6W
RV03	24366391	Res, Carbon	390	J 1/6W
RV04	24366271	Res, Carbon	270	J 1/6W
RV05	24366471	Res, Carbon	470	J 1/6W
RV06	24366271	Res, Carbon	270	J 1/6W
RV07	24366102	Res, Carbon	1K	J 1/6W
RV08	24366681	Res, Carbon	680	J 1/6W
RV09	24366302	Res, Carbon	3K	J 1/6W
RV10	24366472	Res, Carbon	4. 7K	J 1/6W
RV11	24366333	Res, Carbon	33K	J 1/6W
RV12	24366101	Res, Carbon	100	J 1/6W
RV13	24366101	Res, Carbon	100	J 1/6W
RV14	24366102	Res, Carbon	1K	J 1/6W
RV15	24366101	Res, Carbon	100	J 1/6W
RV16	24366102	Res, Carbon	1K	J 1/6W
RV17	24366102	Res, Carbon	1K	J 1/6W
RV18	24366102	Res, Carbon	1K	J 1/6W
RV19	24366183	Res, Carbon	18K	J 1/6W
RV20	24366562	Res, Carbon	5. 6K	J 1/6W
RV21	24366124	Res, Carbon	120K	J 1/6W
		- MISCELLANEOUS -		
PV01	23367992	Plug, 9P		
VV01D	23969946	Tape		
■U701	70198968	P C Board Assy, AUDIO		
		- INTEGRATED CIRCUITS -		
IC701	70119932	IC	BA7765AS	
		- TRANSISTORS -		
Q702	A6319300	Transistor	2SC1959-Y	
		- COILS -		
L701	23237729	Coil, Peaking	TRF4822AP	
L702	23237969	Coil, Peaking	TRF4331AC	
		- CAPACITORS -		
# C701	24436821	Cap, Ceramic	820PF	J 50V
C702	24212332	Cap, Ceramic	3300PF	K 50V
C703	24206479	Cap, Electrolytic	4. 7MF	M 50V
# C704	24212101	Cap, Ceramic	100PF	K 50V
C705	24591103	Cap, Plastic	0. 01MF	J 50V
C706	24203100	Cap, Electrolytic	10MF	M 16V
C707	24203100	Cap, Electrolytic	10MF	M 16V
C708	24203470	Cap, Electrolytic	47MF	M 16V
C709	24085988	Cap, Electrolytic	1MF	M 50V
C713	24206479	Cap, Electrolytic	4. 7MF	M 50V
C714	24591822	Cap, Plastic	8200PF	J 50V
C715	24591183	Cap, Plastic	0. 018MF	J 50V
C716	24591203	Cap, Plastic	0. 02MF	J 50V
C717	24206010	Cap, Electrolytic	1MF	M 50V
C718	24206010	Cap, Electrolytic	1MF	M 50V
C719	24204330	Cap, Electrolytic	33MF	M 25V
C720	24591103	Cap, Plastic	0. 01MF	J 50V
C721	24591103	Cap, Plastic	0. 01MF	J 50V
C722	24203470	Cap, Electrolytic	47MF	M 16V
C723	24082049	Cap, Plastic	0. 047MF	J 100V
C724	24214221	Cap, Ceramic	220PF	K 500V
C725	24232103	Cap, Ceramic	0. 01MF	Z 50V
		- RESISTORS -		
# R701	24360473	Res, Carbon	47K	J 1/8W
# R702	24360511	Res, Carbon	510	J 1/8W
# R703	24360334	Res, Carbon	330K	J 1/8W
# R704	24360221	Res, Carbon	220	J 1/8W
# R705	24360123	Res, Carbon	12K	J 1/8W
# R706	24360562	Res, Carbon	5. 6K	J 1/8W
# R707	24360105	Res, Carbon	1M	J 1/8W
# R708	24360272	Res, Carbon	2. 7K	J 1/8W
# R709	24360103	Res, Carbon	10K	J 1/8W
# R711	24360102	Res, Carbon	1K	J 1/8W
# R712	24360102	Res, Carbon	1K	J 1/8W
# R713	24360273	Res, Carbon	27K	J 1/8W
# R714	24360472	Res, Carbon	4. 7K	J 1/8W
# R715	24360392	Res, Carbon	3. 9K	J 1/8W
# R716	24360100	Res, Carbon	10	J 1/8W
# R717	24360201	Res, Carbon	200	J 1/8W
# R718	24360562	Res, Carbon	5. 6K	J 1/8W
# R719	24360333	Res, Carbon	33K	J 1/8W
# R720	24360229	Res, Carbon	2. 2	J 1/8W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
# R721	24360101	Res, Carbon	100	J 1/8W
# R722	24360822	Res, Carbon	8. 2K	J 1/8W
		- MISCELLANEOUS -		
T701	23224916	Coil	TLN1069T	
■U803	70188781	P C Board Assy	Converter 2	
		- TRANSISTORS -		
Q801	23314520	IC (HIC)	STRD1706L902	
		- DIODES -		
D803	23118056	Diode	AG01	
D804	23118056	Diode	AG01	
D805	23118056	Diode	AG01	
D806	23118056	Diode	AG01	
		- CAPACITORS -		
C807	24591472	Cap, Plastic	4700PF	J 50V
C808	24538223	Cap, Plastic	0. 022MF	J 50V
C809	24206100	Cap, Electrolytic	10MF	M 50V
C810	24538333	Cap, Plastic	0. 033MF	J 50V
C811	24538473	Cap, Plastic	0. 047MF	J 50V
C812	24617920	Cap, Electrolytic	120MF	M 25V
C813	24617920	Cap, Electrolytic	120MF	M 25V
		- RESISTORS -		
R802	24376154	Res, Carbon	150K	J 1/2W
R805	24554470	Res, Oxide Metal	47	J 2W
R806	24554470	Res, Oxide Metal	47	J 2W
R807	24552180	Res, Oxide Metal	18	J 1/2W
R808	24366100	Res, Carbon	10	J 1/6W
		- MISCELLANEOUS -		
Q801B	70391355	Screw, 3x8mm		
■U804	70188782	P C Board Assy	Regulator	
		- INTEGRATED CIRCUITS -		
IC820	70119737	IC	BA10324	
		- TRANSISTORS -		
Q812	23314141	Transistor	2SC3852	
Q813	A6002020	Transistor	RN1202	
Q814	A6325549	Transistor	2SC2236-Y	
Q815	70114344	Transistor	2SD1198A-Q	
Q816	A6319300	Transistor	2SC1959-Y	
		- DIODES -		
D816	70115421	Diode, Zener	EQA02-05E	
D817	A7160570	Diode	1SS176	
D818	A7160570	Diode	1SS176	
D819	A7160570	Diode	1SS176	
D820	A7160570	Diode	1SS176	
		- CAPACITORS -		
C824	24203220	Cap, Electrolytic	22MF	M 16V
C826	24794470	Cap, Electrolytic	47MF	M 16V
C827	24793101	Cap, Electrolytic	100MF	M 10V
C828	24794470	Cap, Electrolytic	47MF	M 16V
C830	24206010	Cap, Electrolytic	1MF	M 50V
C834	24203220	Cap, Electrolytic	22MF	M 16V
		- RESISTORS -		
R822	24366820	Res, Carbon	82	J 1/6W
R823	24367392	Res, Carbon	3. 9K	G 1/6W
R824	24367682	Res, Carbon	6. 8K	G 1/6W
R825	24366152	Res, Carbon	1. 5K	J 1/6W
R826	24366301	Res, Carbon	300	J 1/6W
R827	24366472	Res, Carbon	4. 7K	J 1/6W
R829	24366102	Res, Carbon	1K	J 1/6W
R830	24366471	Res, Carbon	470	J 1/6W
R831	24366104	Res, Carbon	100K	J 1/6W
■U805	70188783	P C Board Assy	Power TR	
		- TRANSISTORS -		
Q810	23314141	Transistor	2SC3852	
■UB01	70188774	P C Board Assy	PIF Second	
		- INTEGRATED CIRCUITS -		
ICB08	B0383400	IC	TA8710S	
		- TRANSISTORS -		
QB01	A6534430	Transistor	2SA1048-Y	
QB02	A6012040	Transistor	RN2204	
QB03	A6332430	Transistor	2SC2458-Y	
QB04	A6332430	Transistor	2SC2458-Y	

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
QB05	A6332430	Transistor	2SC2458-Y	
QB06	A6332430	Transistor	2SC2458-Y	
QB07	A6332430	Transistor	2SC2458-Y	
QB09	A6002020	Transistor	RN1202	
QB10	A6002020	Transistor	RN1202	
QB11	A6002020	Transistor	RN1202	
QB12	A6002020	Transistor	RN1202	
		- COILS -		
LB01	23238713	Coil, Peaking	TRF4120AJ	
LB02	23238706	Coil, Peaking	TRF4470AJ	
LB51	23262782	Coil, IF	TRF1108	
LB52	23262739	Coil, IF	TRF1126D	
		- CAPACITORS -		
CB01	24591223	Cap, Plastic	0.022MF	J 50V
CB02	24591363	Cap, Plastic	0.036MF	J 50V
CB03	24206010	Cap, Electrolytic	1MF	M 50V
CB04	24203100	Cap, Electrolytic	10MF	M 16V
CB05	24206228	Cap, Electrolytic	0.22MF	M 50V
CB06	24203470	Cap, Electrolytic	47MF	M 16V
CB07	24473470	Cap, Ceramic	47PF	J 50V
CB08	24473470	Cap, Ceramic	47PF	J 50V
CB09	24474103	Cap, Ceramic	0.01MF	N 16V
CB11	24474471	Cap, Ceramic	470PF	K 50V
CB12	24474471	Cap, Ceramic	470PF	K 50V
CB14	24474103	Cap, Ceramic	0.01MF	N 16V
CB15	24203470	Cap, Electrolytic	47MF	M 16V
CB16	24474103	Cap, Ceramic	0.01MF	N 16V
CB17	24474103	Cap, Ceramic	0.01MF	N 16V
CB18	24474103	Cap, Ceramic	0.01MF	N 16V
CB19	24474103	Cap, Ceramic	0.01MF	N 16V
		- RESISTORS -		
RB01	24366223	Res, Carbon	22K	J 1/6W
RB02	24366104	Res, Carbon	100K	J 1/6W
RB03	24366474	Res, Carbon	470K	J 1/6W
RB04	24366243	Res, Carbon	24K	J 1/6W
RB06	24366103	Res, Carbon	10K	J 1/6W
RB07	24366101	Res, Carbon	100	J 1/6W
RB09	24366222	Res, Carbon	2.2K	J 1/6W
RB11	24366391	Res, Carbon	390	J 1/6W
RB13	24366103	Res, Carbon	10K	J 1/6W
RB15	24366331	Res, Carbon	330	J 1/6W
RB16	24366331	Res, Carbon	330	J 1/6W
RB17	24366100	Res, Carbon	10	J 1/6W
RB19	24366333	Res, Carbon	33K	J 1/6W
RB20	24366123	Res, Carbon	12K	J 1/6W
RB21	24366222	Res, Carbon	2.2K	J 1/6W
RB22	24366471	Res, Carbon	470	J 1/6W
RB23	24366471	Res, Carbon	470	J 1/6W
RB24	24366152	Res, Carbon	1.5K	J 1/6W
RB25	24366821	Res, Carbon	820	J 1/6W
RB26	24366105	Res, Carbon	1M	J 1/6W
RB28	24366471	Res, Carbon	470	J 1/6W
RB29	24366471	Res, Carbon	470	J 1/6W
RB30	24366222	Res, Carbon	2.2K	J 1/6W
RB31	24366271	Res, Carbon	270	J 1/6W
RB32	24366102	Res, Carbon	1K	J 1/6W
		- MISCELLANEOUS -		
PB01	23367434	Plug, 15P		
XB01	23153900	Resonator, 500KHz, TCR1010		
ZB01	23107948	Filter, 6.0MHz		
ZB02	23107949	Filter, Ceramic, 6.5MHz		
ZB03	23107947	Filter, SIF, 5.5MHz		
ZB04	23107948	Filter, 6.0MHz		
■UX01	70188775	P C Board Assy	Timer	
		- INTEGRATED CIRCUITS -		
ICX01	70128498	IC	M50957-236SP	
ICX02	70128386	IC	PST572C	
ICX10	70128192	IC	BR93C46	
		- TRANSISTORS -		
QX05	A6012020	Transistor	RN2202	
QX06	A6012020	Transistor	RN2202	
QX07	A6002040	Transistor	RN1204	
QX08	A6332430	Transistor	2SC2458-Y	
QX09	A6332430	Transistor	2SC2458-Y	

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
		- DIODES -		
DX02	A7160590	Diode	1SS177	
DX04	A7160590	Diode	1SS177	
DX06	A7160590	Diode	1SS177	
DX15	A7160590	Diode	1SS177	
DX16	A7160590	Diode	1SS177	
DX17	A7160590	Diode	1SS177	
DX18	A7160590	Diode	1SS177	
DX19	A7160590	Diode	1SS177	
DX20	A7160590	Diode	1SS177	
DX21	A7160590	Diode	1SS177	
DX22	A7160590	Diode	1SS177	
DX24	A7160590	Diode	1SS177	
DX26	A7160590	Diode	1SS177	
DX36	23316270	Diode	DA218S	
		- CAPACITORS -		
CX01	24630858	Cap, Electrolytic	47MF	M 10V
CX03	24474101	Cap, Ceramic	100PF	K 50V
CX04	24474101	Cap, Ceramic	100PF	K 50V
CX05	24473100	Cap, Ceramic	10PF	J 50V
CX08	24474103	Cap, Ceramic	0.01MF	N 16V
CX10	24630858	Cap, Electrolytic	47MF	M 10V
CX11	24474103	Cap, Ceramic	0.01MF	N 16V
CX12	24474102	Cap, Ceramic	1000PF	K 50V
CX13	24630858	Cap, Electrolytic	47MF	M 10V
CX29	24474103	Cap, Ceramic	0.01MF	N 16V
CX30	24474102	Cap, Ceramic	1000PF	K 50V
CX51	24093953	Cap, Variable		
		- RESISTORS -		
RX01	24366223	Res, Carbon	22K	J 1/6W
RX02	24366223	Res, Carbon	22K	J 1/6W
RX03	24366223	Res, Carbon	22K	J 1/6W
RX04	24366223	Res, Carbon	22K	J 1/6W
RX05	24366103	Res, Carbon	10K	J 1/6W
RX06	24366103	Res, Carbon	10K	J 1/6W
RX07	24366103	Res, Carbon	10K	J 1/6W
RX08	24366103	Res, Carbon	10K	J 1/6W
RX09	24366223	Res, Carbon	22K	J 1/6W
RX10	24366101	Res, Carbon	100	J 1/6W
RX11	24366103	Res, Carbon	10K	J 1/6W
RX12	24366102	Res, Carbon	1K	J 1/6W
RX13	24366221	Res, Carbon	220	J 1/6W
RX14	24366102	Res, Carbon	1K	J 1/6W
RX15	24366221	Res, Carbon	220	J 1/6W
RX16	24366221	Res, Carbon	220	J 1/6W
RX17	24366221	Res, Carbon	220	J 1/6W
RX18	24366101	Res, Carbon	100	J 1/6W
RX19	24366102	Res, Carbon	1K	J 1/6W
RX20	24366102	Res, Carbon	1K	J 1/6W
RX21	24366102	Res, Carbon	1K	J 1/6W
RX22	24366683	Res, Carbon	68K	J 1/6W
RX23	24366683	Res, Carbon	68K	J 1/6W
RX24	24366105	Res, Carbon	1M	J 1/6W
RX25	24941515	Res, Composition	5.1M	J 1/4W
RX26	24941515	Res, Composition	5.1M	J 1/4W
RX29	24366103	Res, Carbon	10K	J 1/6W
RX30	24366222	Res, Carbon	2.2K	J 1/6W
RX31	24366101	Res, Carbon	100	J 1/6W
RX32	24366101	Res, Carbon	100	J 1/6W
RX33	24366102	Res, Carbon	1K	J 1/6W
RX34	24366303	Res, Carbon	30K	J 1/6W
RX35	24366104	Res, Carbon	100K	J 1/6W
RX36	24366102	Res, Carbon	1K	J 1/6W
RX37	24366102	Res, Carbon	1K	J 1/6W
RX38	24366473	Res, Carbon	47K	J 1/6W
RX39	24366101	Res, Carbon	100	J 1/6W
RX40	24366223	Res, Carbon	22K	J 1/6W
RX41	24366223	Res, Carbon	22K	J 1/6W
RX42	24366472	Res, Carbon	4.7K	J 1/6W
RX43	24366472	Res, Carbon	4.7K	J 1/6W
RX44	24366102	Res, Carbon	1K	J 1/6W
RX46	24366101	Res, Carbon	100	J 1/6W
RX47	24366101	Res, Carbon	100	J 1/6W
RX48	24366101	Res, Carbon	100	J 1/6W
RX49	24366101	Res, Carbon	100	J 1/6W

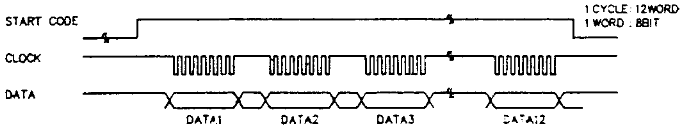
LOCATION NUMBER	PART NUMBER	DESCRIPTION		
		- MISCELLANEOUS -		
GX01	70113162	FIP	10-MT-35GK	
PX01A	23367716	Plug, 12P		
S204	23145248	Slide Switch, 2C3P		
SL02	23145394	Push Switch, 1C1P		
SL03	23344094	Push Switch		
SL05	23145394	Push Switch, 1C1P		
SL06	23344094	Push Switch		
SL07	23344094	Push Switch		
SL08	23344094	Push Switch		
SX15	23145394	Push Switch, 1C1P		
SX33	23145247	Slide Switch, 2C2P		
SX34	23145394	Push Switch, 1C1P		
SX35	23145247	Slide Switch, 2C2P		
SX36	23344149	Slide Switch	2C4P	
SX37	23145247	Slide Switch, 2C2P		
WX02	70178243	Wire	FFC, 13P, 110mm	
WX02A	23902364	Connecter, FFC 13P		
XX01	23153744	Resonator, 5MHz, CSA5.00MG040		
XX02	23153860	Crystal, 32.768kHz		
ZR01	23120371	F.U	IR-9106-K	
■UI07	70198860	P C Board Assy, ACE HEAD		
		- RESISTORS -		
RI71	24366100	Res, Carbon	10	J 1/6W
■UI04	70188882	P C Board Assy	Mecha Base Sub	
		- TRANSISTORS -		
QI22	70114403	Transistor, Photo	PT439F	
QI51	A6090500	Hall Sensor	THS114	
		- MISCELLANEOUS -		
PI41	23902566	FPC, 6P		
SI25	23344089	Push Switch, 1C1P		
■UI05	70188881	P C Board Assy	Mecha Base Main	
		- INTEGRATED CIRCUITS -		
ICI61	B0470212	IC	TC4021	
ICI62	70128158	IC	BA10393	
		- TRANSISTORS -		
QI41	A6090500	Hall Sensor	THS114	
		- DIODES -		
DI61	70115450	Diode, LED	GL451V	
		- CAPACITORS -		
CI61	24474103	Cap, Ceramic	0.01MF	N 16V
CI81	24474103	Cap, Ceramic	0.01MF	N 16V
CI82	24474103	Cap, Ceramic	0.01MF	N 16V
CI86	24474103	Cap, Ceramic	0.01MF	N 16V
CI87	24474103	Cap, Ceramic	0.01MF	N 16V
		- RESISTORS -		
RI60	24366472	Res, Carbon	4.7K	J 1/6W
RI61	24366472	Res, Carbon	4.7K	J 1/6W
RI62	24366472	Res, Carbon	4.7K	J 1/6W
RI63	24366472	Res, Carbon	4.7K	J 1/6W
RI65	24366472	Res, Carbon	4.7K	J 1/6W
RI66	24366273	Res, Carbon	27K	J 1/6W
RI67	24366683	Res, Carbon	68K	J 1/6W
RI68	24366472	Res, Carbon	4.7K	J 1/6W
RI70	24366103	Res, Carbon	10K	J 1/6W
RI71	24366103	Res, Carbon	10K	J 1/6W
RI72	24366103	Res, Carbon	10K	J 1/6W
RI73	24366103	Res, Carbon	10K	J 1/6W
RI75	24366103	Res, Carbon	10K	J 1/6W
RI76	24366103	Res, Carbon	10K	J 1/6W
RI77	24366103	Res, Carbon	10K	J 1/6W
RI78	24366103	Res, Carbon	10K	J 1/6W
RI80	24366151	Res, Carbon	150	J 1/6W
RI81	24366561	Res, Carbon	560	J 1/6W
RI82	24366561	Res, Carbon	560	J 1/6W
RI83	24366103	Res, Carbon	10K	J 1/6W
RI84	24366334	Res, Carbon	330K	J 1/6W
RI85	24366103	Res, Carbon	10K	J 1/6W
RI86	24366334	Res, Carbon	330K	J 1/6W
RI87	24366151	Res, Carbon	150	J 1/6W
RI88	24366151	Res, Carbon	150	J 1/6W
RI89	24366151	Res, Carbon	150	J 1/6W

LOCATION NUMBER	PART NUMBER	DESCRIPTION	
		- MISCELLANEOUS -	
PI51	23901261	Socket, 18P	
PI52	23902570	FPC, 10P	
PI53	23902566	FPC, 6P	
PI54	23902593	FPC, 5P	
WI21	70179392	Wire	
■UI08	70198858	P C Board Assy, LOADING M(T)	
■UI02	70198857	P C Board Assy, FL	
		- TRANSISTORS -	
QI21	70114404	Transistor, Photo	PT361F
		- MISCELLANEOUS -	
SI22	70145382	FL Switch	
■UT01	70188621	P C Board Assy	Remote Control

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
		DIFFERENCE LIST		
V880MC				
■UX01	70188852	P C Board Assy	Timer	
		- DIODES -		
DX26	--------	Not Used		
■UL01	70188855	P C Board Assy	Logic SW	
■U801	70188854	P C Board Assy	Converter 1	
■U202	70188853	P C Board Assy	Main	
		- INTEGRATED CIRCUITS -		
IC302	--------	Not Used		
		- TRANSISTORS -		
Q113	--------	Not Used		
Q114	--------	Not Used		
Q304	--------	Not Used		
Q305	--------	Not Used		
Q481	--------	Not Used		
Q482	--------	Not Used		
		- DIODES -		
D301	--------	Not Used		
D302	--------	Not Used		
D304	A7160570	Diode	1SS176	
D305	A7160570	Diode	1SS176	
D306	--------	Not Used		
		- COILS -		
L352	--------	Not Used		
		- CAPACITORS -		
C103	24436331	Cap, Ceramic	330PF	J 50V
C122	--------	Not Used		
C124	--------	Not Used		
C307	--------	Not Used		
C308	--------	Not Used		
C309	--------	Not Used		
C310	--------	Not Used		
C311	--------	Not Used		
C312	--------	Not Used		
C314	--------	Not Used		
C481	--------	Not Used		
		- RESISTORS -		
R129	--------	Not Used		
R130	--------	Not Used		
R131	--------	Not Used		
R132	--------	Not Used		
R308	--------	Not Used		
R309	--------	Not Used		
R311	--------	Not Used		
R312	--------	Not Used		
R313	--------	Not Used		
R314	--------	Not Used		
R315	--------	Not Used		
R316	--------	Not Used		
R317	--------	Not Used		
R382	--------	Not Used		
R481	--------	Not Used		
R482	--------	Not Used		
		- MISCELLANEOUS -		
Z302	--------	Not Used		
Z481	--------	Not Used		

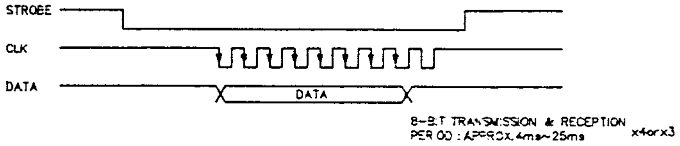
Serial Transmission

① ICX01(TIMER) ←→ IC601(LOGIC MAIN)


START CODE
CLOCK
DATA
DATA1
DATA2
DATA3
DATA12
PERIOD : APPROX.60ms
1 CYCLE : 12WORD
1 WORD : 8BIT

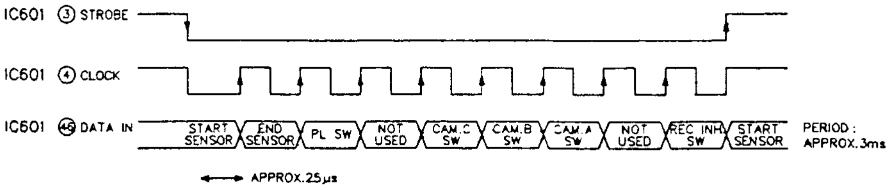
DIRECTION	CONTENTS	DATA
TIMER → LOGIC	• POWER ON/OFF • TAPE SPEED (REC) • E240/E180 SELECTION • TIME SEARCH • REMAIN ON/OFF • COUNTER RESET INPUT	DATA1
	• KEY INPUT DATA • COUNTER SYMBOL BACK UP • TV/VTR SELECTION	DATA3
	• LINEAR TIME COUNTER BACK UP, CASSETTE DISTINCTION BACK UP • SLOW TRACKING DATA • VISS SEARCH DATA • TIME SEARCH COUNTER DATA • TIME SEARCH MODE • VISS MODE INPUT	DATA5,7,9
	• LINE ON/OFF • EE ON/OFF • AUTO TRACKING ON/OFF	DATA11
LOGIC → TIMER	• ▭ DISPLAY DATA, TAPE SPEED (PLAY) • REC INHIBIT • AUTO TRACKING AND DEW DISPLAY, COUNTER SYMBOL	DATA2
	• MODE DISPLAY DATA • REMAIN DISPLAY SELECTION • PLAY +B • POWER ON/OFF	DATA4
	• LINEAR TIME COUNTER DATA • TAPE REMAIN DATA • VISS DATA • VISS MODE	DATA6,8,10
	• NTSC/CCIR	DATA12

② IC601(LOGIC MAIN) ←→ IC602(LOGIC SUB)


STROBE
CLK
DATA
DATA
8-BIT TRANSMISSION & RECEPTION
PERIOD : APPROX.4ms~25ms
x4orx3

DIRECTION	CONTENTS	DATA
IC601 → IC602	• MODE DATA • TV/VTR	1
	• POWER LED • SERVO LOCK DETECTION (PLAY, REC) • MECHA POSITION DETECTION • TAPE SPEED • QUICK REMAIN • NTSC/CCIR	2
	• AUTO TRACKING ON/OFF • EE-SW ON/OFF • CYLINDER ON/OFF • UNLOADING DETECTION	3
	• SLOW TRACKING DATA (MANUAL)	4
IC602 → IC601	• MODE AUTOMATIC RELEASE DETECTION • REEL CYLINDER ROTATION DETECTION • DEW	1
	• AUTO TRACKING DISPLAY DATA • PLAY +B ON/OFF	2
	• SLOW TRACKING DATA (AUTO)	3

③ IC601(LOGIC MAIN) ←→ IC161(MECHA PARALLEL-SERIAL CONVERSION)


IC601 ③ STROBE
IC601 ④ CLOCK
IC601 ㊻ DATA IN
START SENSOR
END SENSOR
PL SW
NOT USED
CAM.C SW
CAM.B SW
CAM.A SW
NOT USED
REC INH SW
START SENSOR
PERIOD : APPROX.3ms
APPROX.25μs

Logic Mode Shift Table

SW INPUT CURRENT MODE	EJECT	STOP	F F	REW	PLAY	×2	PAUSE /STILL	SLOW 1/6	SLOW 1/12	REC		TIMER REC	TAPE RETURN	TIME SEARCH		POWER
SLOT IN	○	○	△	△	△	△	×	×	×	×		×	—	—		POWER OFF
SLOT OUT	—	×	×	×	×	×	×	×	×	×		×	×	×		POWER OFF
STOP	○	—	○	○	○	○	×	×	×	○		○	○	○		POWER OFF
FF	○	○	CUE *	○	○	○	×	×	×	×		○	×	×		POWER OFF
REW	○	○	○	REVIEW *	○	○	×	×	×	×		○	×	×		POWER OFF
CUE	○	○	○	REVIEW *	○	○	×	×	×	×		○	×	×		POWER OFF
REVIEW	○	○	CUE *	○	○	○	×	×	×	×		○	×	×		POWER OFF
PLAY	○	○	CUE *	REVIEW *	—	○	STILL	○	○	×		○	×	○		POWER OFF
STILL	○	○	CUE *	REVIEW *	○ NOTE 1	○	PLAY	○	○	REC PAUSE		○	×	×		POWER OFF
SLOW 1/6	○	○	CUE *	REVIEW *	○	○	STILL	—	○	×		○	×	×		POWER OFF
SLOW 1/12	○	○	CUE *	REVIEW *	○	○	STILL	○	—	×		○	×	×		POWER OFF
×2	○	○	CUE *	REVIEW *	○	—	STILL	○	○	×		○	×	×		POWER OFF
REC	×	○	×	×	×	×	REC PAUSE	×	×	—		○	×	×		POWER OFF
REC PAUSE	×	○	×	×	×	×	REC	×	×	×		○	×	×		POWER OFF
TIMER REC	×	×	×	×	×	×	×	×	×	×		POWER OFF	×	×		POWER ON
POWER OFF	×	×	×	×	×	×	×	×	×	×		○	×	×		POWER ON

NOTE 1 : FRAME (1/25 SLOW MODE WHEN BUTTON IS KEPT PUSHING)

○ · · · SHIFTS TO INPUT MODE DIRECTORY.

△ · · · SHIFTS TO INPUT MODE AFTER SLOT IN IS COMPLETED.

× · · · NO SHIFT. (SAME MODE)

* · · · PAL : ×7 MODE,
NTSC : ×5 MODE